Materials

The CMP provides knowledge on the circular economy and legislation and contains the review frameworks for the implementation of waste legislation. The CMP's waste and chain plans contain this knowledge and frameworks for 60 specific materials.

These are 60 materials that are commonly released as waste in the Netherlands and for which there is a need for a uniform assessment framework for operations involving such waste. The plans provide the assessment framework for the competent authority to authorise the processing of these wastes in the Netherlands. In addition, it provides the assessment framework for the authorisation of cross-border transport by the Human Environment and Transport Inspectorate (ILT).

The waste plans (54) consist of this assessment framework and an explanation. The chain plans (6) contain additional information compared to a waste plan. A chain plan describes the entire chain of design, production, use and processing. This gives the CMP user a concrete picture of the choices chain parties can or should make to make a specific material circular.

Circular Materials Plan Design

Asphalt waste plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

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Asphalt waste plan

This Waste Plan provides the assessment framework that competent authorities should take into account when granting permits for waste treatment and cross-border asphalt transport.

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of asphalt. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of this waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Assessment frameworks

This part of the plan describes how companies should process asphalt and the issues to be addressed. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
PAH-rich asphalt *(PAH10>75 mg/kg dry matter)*	This is asphalt with a concentration of PAH10 > 75 mg/kg dry matter.[1] In general, this type of asphalt with tar as a binding agent (tar-containing asphalt) is concerned.[2] The limit of 75 mg/kg dry matter is derived from the maximum composition value from the Soil Quality Regulation.
Low-PAH asphalt *(PAH10≤75 mg/kg dry matter)*	This is asphalt with a concentration of PAH10 ≤ 75 mg/kg dry matter. In general, this asphalt is covered with bitumen as a binder. The limit of 75 mg/kg dry matter is derived from the maximum composition value from the Soil Quality Regulation. The batch-mixing limit for PAH-poor asphalt must not be reached.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below address the following aspects that are relevant for authorising the processing of asphalt:

- mixing permission (2.1)

- the minimum standard (2.2)

2.1 Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both mixing and blending with non-waste. Mixing within one waste category of the Bal can also take place and be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check if mixing is a licence is required. In addition, the [chapter immobilisate, filler or aggregate] describes when an authorisation is required for the production of construction materials from waste materials.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

1 It concerns the sum concentration of the following substances: naphthalene, phenanthrene, anthracene, fluoranthene, chrysene, benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, indeno(1,2,3cd) pyrene and benzo(ghi)perylene.

2 Released tar-containing asphalt is also referred to as TAG (tar-containing asphalt granulate).

N°	GA/NGA*	Bal waste category	Wastes covered
40A	GA	Asphalt with more than 75 mg/kg PAK10 VROM, which, based on the European Waste List Order (Regeling Europese afvalstoffenlijst) as hazardous waste should be classified	For asphalt, in particular, the content of polycyclic aromatic hydrocarbons (PAHs) determines the distinction between hazardous and non-hazardous waste. Tar contains a high level of PAHs. Asphalt with a PAH10 content of more than 75 mg/kg is referred to as PAH-rich (tar-containing) and classified as hazardous waste.
41	Nga	Asphalt containing not more than 75 mg/kg of PAHs that is not a hazardous waste material	For asphalt, in particular, the content of PAHs determines the distinction between hazardous and non-hazardous waste. Tar contains a high level of PAHs, with an asphalt content of less than 75 mg/kg of PAH10 being designated as a low-tar PAH (non-hazardous) waste.
112A	GA	Other hazardous waste that cannot be disposed of in a landfill in accordance with the Landfills and Waste Dumping Decree (Besluit stortplaatsen en) waste dumping bans or a minimum standard from the Circular Materials Plan	In exceptional cases, low-PAH asphalt is hazardous waste not because of the presence of tar, but because of specific other contaminants.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 ‘Keeping waste separate’].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

For asphalt, this plan includes the following specific provisions to be taken into account by the competent authority in derogation from or in addition to the general assessment framework:

Cat. Bal	Allowing mixing operations
40A	In addition to [mixing of waste], the competent authority cannot authorise the reduction of PAH10 concentrations in asphalt to 75 mg/kg of dry matter or less by mixing or diluting PAH-rich asphalt.
112A	By way of derogation from the [Waste Mixing Chapter], the competent authority can only authorise the mixing of PAH-poor asphalt (waste category 112A) with other waste category 112A or 112B if all the waste to be mixed is processed in accordance with their minimum standard.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of asphalt.

2.2Minimum standard

The processing of asphalt must be carried out in accordance with the following minimum standards. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the processing of asphalt:

Part strom	**Waste**	**Minimum standard**

a	PAH-rich asphalt	Process thermally in a manner that recycles the mineral fraction and destroys the PAHs. Hereby: • incineration requires energy content to be taken into account; • pyrolysis and gasification require recovery of the hydrocarbons produced. This minimum standard means that recycling into a building material by means of immobilisation without destruction of the PAHs present is expressly not permitted. To qualify as PAH-rich (tar-containing), the measurements of the material taken by an accredited laboratory are taken by cores from the hardening surface (see explanation in section ...). 5). After milling, a lot of asphalt should not be classified as a PAH arm by re-testing, e.g. in an intermediate storage site, on the basis of a new analysis.
b	Low-PAH asphalt	Recycle.

An explanation of the above minimum standards in relation to high-quality processing is provided in [Section 5.2 ‘Explanation of the minimum standard’].

Wastes containing certain SVHCs

The above minimum standard takes into account the presence of PAHs. The waste may also contain other SVHCs. Both the legislation described and the assessment frameworks of [Chapter mengen van afvalstoffen] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this Waste Plan, the above has been developed into a specific assessment framework for assessing whether the transfer of asphalt is permitted. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by ‘nEVOA’. In other cases, only the ‘WSR’ appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Overall

The Order of the State Secretary for Infrastructure and Water Management of 7 October 2021, No IENW/BSK-2021/256931, sets the above-described PAH10 standard in the Order on the European list of waste (PAH10 content exceeding 75 mg/kg) as a limit for classification as ‘hazardous waste’. The corresponding EURAL code is 17 03 01*.

The EVOA contains a provision that waste classified as ‘hazardous waste’ is subject to the notification procedure even if it is on the list that does not require notification.

Until 20 May 2026, most of the provisions of the unchanged EWSR apply. Article 3(3) states that ‘green list’ waste shall be treated as ‘amber list’ waste in exceptional cases where it presents hazardous properties, as referred to in Annex III to the WFD. The amended EVOA contains the same provision, in an amended wording, in Article 4(2)(e)(i).

The limit of 75 mg/kg of PAH10 is thereby replacing in the Netherlands the limit of 50 mg/kg of benzo(a)pyrene for green list code B2130, which is mentioned in a footnote in Annex V to the EVOA. This means that for asphalt with more than 75 mg/kg PAH10, export must be requested via a notification procedure to the ILT. This obligation enables the ILT to check, in advance, whether thermal treatment is taking place abroad, with the destruction of PAHs, and the recycling of the mineral fraction of the asphalt.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [SVHCs and other substances of concern] in this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Scope of the assessment framework, grounds and conditions for objection

The following assessment framework applies to all asphalt component streams as specified in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for reuse	Due to the nature of the waste, not applicable.
(Interim recovery followed by) recycling for component stream a	Unless the PAHs-containing fraction is destroyed during processing in the country of destination. Otherwise, the ground for objection under Article 12(1)(d) of the nEVOA (Article 12(1)(c) of the EVOA) applies (in any case).
(Interim recovery followed by) recycling for component stream b	If the degree of recovery does not justify the shipment. This is the case when the quantity of recycled is less than is common when PAH-poor asphalt is processed in the Netherlands. In addition, any landfilling of asphalt is too high (grounds for objection Article 12(1)(b) and (i) EVOA (Article 12(1)(g) EVOA).
Other recovery	Higher quality processing in the form of recycling (for PAH-rich asphalt after destruction or disposal of the PAHs-containing fraction) is possible (objection ground Article 12(1)(a), (b) and/or (e) EWSR (Article 12(1)(a) and, for shipments to the Netherlands, Article 12(1)(k) EWSR)). This prohibition also applies to transfers for backfilling or recovery in the deep substratum, as well as to the manufacture of mortars for backfilling operations.

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
All forms of (preliminary) disposal except landfilling	This is because higher-quality processing in the form of recovery is possible (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
Landfill	This is because higher-quality processing in the form of recovery is possible; and • under national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. Specific information is provided in [Section 6 'Waste or non-waste'].

4. Explanatory notes on the scope

Asphalt is released during the renovation or replacement of roads. The Waste Plan identifies two types of asphalt: Tar-free asphalt PAH-poor and tar-containing asphalt PAH-rich. PAH-poor asphalt consists of a mixture of gravel, crushed rock (occasionally phosphor cinder or steel cinder), sand, filler and bitumen as a binder. Bitumen is a petroleum distillates product. The binding agent of PAHrich asphalt is tar. It is also referred to as coal tar, but there are some processing steps between coal tar and the tar used in asphalt. Coal tar is a by-product of the production of coke from coal. It is a raw material for the production of a wide range of hydrocarbons.

Tar is rich in polycyclic aromatic hydrocarbons (PAHs). Bitumen also contains PAHs, but considerably less than tar. PAHs pose a risk to human health and the environment. Some PAHs have been classified as carcinogens. Tar also contains a wide variety of other hydrocarbons, which can be harmful to humans or the environment. Tar, as a whole, has been classified as a carcinogen in international regulations.[3] Asphalt with a high tar content also contains other substances such as phenol and sometimes heavy metals.

Before 1991, tar was used in road construction. Released tar-containing asphalt (granulate) has been used in new asphalt and in road foundations, often mixed with other stony materials. Since 1991, tar has been put into road construction in the Netherlands. Since 2001, the use of tar-containing asphalt released in road foundations has also been banned. Old tar-containing layers are still present in large parts of the Dutch road network. This may be released during road maintenance.

The determination of asphalt tar is based on the concentration of one or more PAHs, using the sum of the concentrations of 10 PAHs that can be clearly distinguished by chemical analysis, the so-called 'PAH10' group, in the Netherlands.[4] The PAH10 content limit value above which asphalt is considered to contain tar in the Netherlands is 75 mg/kg (dry matter). The PAH-rich and low-PAH terms are used instead of tar-containing and tar-free in regulations:

- Asphalt is low-PAH if the concentration of PAH10 is less than or equal to 75 mg/kg dry matter.
- Asphalt is PAH-rich when the concentration of PAH10 exceeds 75 mg/kg of dry matter.

This standard is in line with the maximum composition values for construction materials set out in Annex A of the Soil Quality Regulation. The maximum compositional values have been established

3 e.g. in Annex VI of Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures (often referred to as the CLP Regulation).

4 The PAH10 group includes: naphthalene, phenanthrene, anthracene, fluoranthene, chrysene, benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, indeno(1,2,3cd) pyrene and benzo(ghi)perylene.

for substances that are commonly present in building materials (including asphalt) and that affect soil quality.

In exceptional situations, low-PAH asphalt can still be hazardous waste. The asphalt is hazardous waste not because of the presence of tar, but because of specific other contaminants. This asphalt must be processed in accordance with the minimum standard for PAH-poor asphalt unless the specific other contaminants make it subject to a different waste plan. For example, asphalt contaminated with asbestos is covered by the [Waste plan asbestos-containing waste].

CROW Publication 210

CROW Publication 210, 'Guideline on handling released asphalt', implements the Dutch policy to identify released tar-containing asphalt, administer it and dispose of it separately to a thermal treatment plant. It is based on the standard of 75 mg PAH10 per kg dry matter. CROW Publication 210 has been produced with input from all stakeholders and is therefore widely accepted. CROW Publication 210 is used by all parties involved in road maintenance in the Netherlands. The specifications drawn up by road authorities require compliance with CROW Publication 210. Executing companies are working in accordance with the relevant rules.

CROW Publication 210 describes the processes by which pre-milling of asphalt from existing pavements can be performed with drill cores to detect the presence of PAH-rich asphalt. PAH-rich layers are disposed of with a margin and disposed of as hazardous waste with EURAL code 17 03 01*.

PAH-rich asphalt is always hazardous waste

In the past, a waste category for PAH-rich asphalt that was not hazardous waste also existed. Since the European Waste List Regulation and the (then) Environmental Management Activities Regulation (No IENW/BSK-2021/256931) was amended on 16 October 2021, all asphalt released with a PAH10 content exceeding 75 mg/kg is classified as hazardous waste (EURAL code 17 03 01*). In practice, this material is extracted separately from CROW 210.

Tar = Tar

The designation as PAH-rich asphalt (tar-containing) is final: a batch entering an intermediate storage site after milling should *not* be classified as PAH poor (eural code 17 03 02) by re-examination. The difference between PAH-rich and PAH-poor asphalt can be measured by an accredited laboratory in the material of cores from the pavement. All transport and intermediate storage of PAH-rich asphalt (tar-containing) in the chain from road manager to thermal processing plant is subject to 'tar in = tar out'.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Mixed construction and demolition waste	see [Mixed construction and demolition waste plan]
Stony material	see [Stony waste plan]
Tar-containing, bituminous and composite roofing waste	see [Roof waste plan]
Material that complies with the definition of 'soil' in Article 1 of the Soil Quality Decree	see [Waste plan land]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 170301*; 170302; 170303*.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1 Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for allowing the mixing of asphalt. In the case of 'mixing', this is described in [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep asphalt separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate_at the construction and demolition site	At construction and demolition sites of construction works, there is a legal obligation to keep tar-containing (PAH-rich) asphalt and non-tar-containing (PAH-poor) asphalt separate and separate disposal *(Living Environment Law (Structures) Decree, Art. 7.24, 7.25 and 7.26)*. This also applies to mobile rubble crushers temporarily installed at construction and demolition sites *(Environmental Structures Decree, Section 7.2 Mobile Break of Construction and Demolition Waste)*.
Keep separate of industrial waste and hazardous waste *(general)*	Companies must always keep asphalt separate and dispose of it separately from other waste unless they have a mixing permit *(Art.). 3.195 and art. 3.196 Bal and 'mixing of waste' chapter*. PAH-rich asphalt (cat.40) must also be separated from PAH-poor asphalt (cat.41). [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to 'disposers' before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Companies must always keep asphalt separated and dispose of it separately by waste category *(Art.). 3.39 Bal in combination with 'Keeping corporate and hazardous waste separate' chapter*. A company that wants to mix asphalt that has to be kept separate with other waste will need a permit to do so. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep asphalt delivered separately from other waste (Waste Collection Decree, Art. 1b.). This applies to both PAH-rich asphalt and PAH-poor asphalt. No derogation is allowed.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.6 'Mixing and building materials']
- [Section 4.2.2 'Mixing of hazardous waste'];
- [Section 4.2.4 'Mixing of POP-containing waste'] and/or [Section 4.2.3 'Mixing of waste containing PBT or vPvB substances or substances of 'equivalent care'].
- [Section 4.2.5 'Mixing prior to or during landfilling'].

In addition, the [chapter immobilisate, filler or aggregate] contains specific assessment frameworks for recycling into building materials.

Always check whether these chapters are applicable to asphalt mixing for all assessment frameworks.
The essence of allowing waste mixing to be mixed is that processing in accordance with the minimum standard should remain possible after mixing. For asphalt, this means that:

- In addition to the provisions of the [Mixing of waste chapter], the competent authority cannot authorise the reduction of PAH10 concentrations in asphalt to 75 mg/kg of dry matter or less by mixing or diluting PAH-rich asphalt.
- Mixing of PAH-rich asphalt within category 40A can be authorised, provided that it is waste that is thermally treated in the same plant, where the PAHs are destroyed and the remaining material is recycled.
- Mixing asphalt with cement to produce a building material (e.g. as a filler or filler) or to create an immobiliser is not allowed for asphalt containing more than 75 mg/kg of PAH10 (waste category 40A).
- Mixing of PAH-poor asphalt, which itself does not meet the quality requirements for non-formed building materials of the Soil Quality Regulation 2022, with non-waste into building materials may be authorised if it meets the assessment framework of the [chapter immobilisate, filler or aggregate].
- The Authority cannot authorise mixing of waste with PAH above the PAH10 limit (category 40A) and below the PAH10 limit (category 41 or 112A), unless the mixture is still stripped of PAH by thermal treatment and the remaining material is recycled.
- The competent authority can only authorise the mixing of PAH-poor asphalt of waste category 41 with waste category 112A for the purpose of recycling if, at the time of processing, the hazardous substances present are broken down, removed or disposed of (to an extent that brings the remaining concentration below the hazardous waste limit). A pre-treatment leading to the incineration of the hazardous substances can also be authorised.
- By way of derogation from the [Waste Mixing Chapter], the competent authority can only authorise the mixing of PAH-poor asphalt (waste category 112A) with other waste category 112A or 112B if all the waste to be mixed is processed in accordance with their minimum standard.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in section 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Reuse is not an option (see section 6.1).
Preparing forre-use	Preparing for reuse is not an option (see section 6.1).
Recycling	For each type of asphalt, ensure the recycling of the mineral fraction. For PAH-poor asphalt, this applies to the entire waste, including the bitumen. In the case of PAH-rich asphalt, the PAH-containing fraction (the tar) must first be destroyed.
Other usefulapplication	This is the minimum standard for the PAH-containing fraction of PAH-rich asphalt. In doing so, the PAHs must be destroyed by thermal processing. If the thermal treatment involves combustion, the energy content must be used. If the thermal treatment involves pyrolysis or gasification, hydrocarbons are formed that must be recovered (utilisation of the 'carbon content'). For PAH-poor asphalt, other recovery is not permitted.
Incineration as a formof disposal	On the basis of the minimum standards, incineration as a form of disposal is not permitted.
Landfill	Asphalt is subject to a dumping ban.

5.2.1 Preparing for reuse

Preparation for reuse is not applicable for asphalt. For PAH-rich asphalt, it is not permitted on the basis of the minimum standard because the PAH present must be destroyed. For PAH-poor asphalt, there will always be more than a simple operation than cleaning or checking before the asphalt can once again serve as asphalt.

5.2.2 Recycling

In any case, the mineral content can be and is recycled from both tar-free and low-rich asphalt (including tar-containing asphalt). The National Circular Economy Programmeaims to recycle at least 95 % of the asphalt released to a high standard by 2030. This percentage corresponds to the mineral part of asphalt.

The recycling of PAH-poor asphalt and PAH-rich asphalt is discussed below.

Low-PAH asphalt

PAH-poor asphalt is granulated and recycled as asphalt granulate in what is called 'PR asphalt' in asphalt plants. PR stands for 'Partial Recycling'. This means that some of the raw materials made from asphalt have been replaced with reclaimed asphalt. The recycling of low-PAH asphalt granulate takes place at temperatures between 100 and 200°C, so that the bitumen is not incinerated, but also recycled in the new asphalt.

Reclaimed asphalt can be recycled in PR asphalt if the resulting mix (the new asphalt) meets both environmental and civil engineering requirements. Currently, around 35-40% of the raw materials for the production of new asphalt are replaced by reclaimed asphalt released (RoyalHaskoning DHV, 2022).

PAH-rich asphalt

In the Netherlands, PAH-rich asphalt must be processed in such a way that the PAH-containing fraction (tar) is destroyed before recycling can take place. All forms of thermal processing in which the PAH-containing fraction is destroyed, its energy content or carbon content is utilised, and the mineral fraction (around 95% of tar-containing asphalt) is recycled are permitted on the basis of the minimum standard.

Due to the carcinogenic properties of tar (in particular due to PAHs present in it), tar must be destroyed. This is done by thermal processing of the asphalt. This may be in the following ways:

- burn,
- pyrolysis, • gasification.

The products produced during thermal processing must be used. For example, the pyrolysis products (oil, volatile hydrocarbons and carbon monoxide) should be used to replace fossil carbon (natural gas, petroleum). When burning, the energy content of the PAH-containing fraction (tar) is released as heat. This energy can be used, for example, by supplying electricity to the grid or steam to a nearby industrial plant. The mineral fraction remaining after thermal processing consists of gravel, sand and fine-grained material. These fractions are separated and mainly used in concrete and asphalt production.

If the PAH-containing fraction of the PAH-rich asphalt has been destroyed, the mineral fraction must be recycled. This is a prerequisite for complying with the minimum standard.

The Soil Quality Regulation 2022 does not allow the use of tar-containing asphalt as a building material, including through immobilisation in concrete. This policy eliminates tar from the asphalt stream over time and prevents other material streams (such as foundation materials) from being contaminated with tar.

Putting in place the necessary facilities at landfills

The minimum standard allows the recycling of low-PAH asphalt in landfills. The use of low-PAH asphalt as a building material in a landfill is only to be considered as recycling if:
- the waste is used for the construction of necessary facilities at the landfill; and
- the waste is substituted for other materials or components that should have been used for that function; and
- the provisions in question cannot be implemented by landfill material offered for disposal, for example because they are not offered.

In all other cases, landfilling is involved. This is contrary to the minimum standard for PAH-poor asphalt.

In addition, for allowing the use as a building material in landfills, the following applies:

- be material that meets the quality requirements set out in the Soil Quality Decree (see paragraph 1).
  4.123 of the Bal; and

- [Section 3.3.2 'Recovery at landfills'] of the 'Landfilling in a circular economy' and Section 1.8.4.1 are complied with. 'use in a landfill' of the [Guide to classification of processing operations].

5.2.3 Other recovery

Other recovery of PAH-poor asphalt is not permitted. PAH-poor asphalt must be recycled in its entirety.

For PAH-rich asphalt, the minimum standard requires the PAH-containing fraction to be destroyed and the mineral fraction recycled. In addition, the minimum standard states that

- the energy content is to be used for the incineration process, or
- the hydrocarbons must be recovered by pyrolysis or gasification.

5.2.4 Incineration as a form of disposal

Incineration of low-PAH asphalt is not permitted on the basis of the minimum standard. Both the bitumen and the mineral fraction must be recycled.

PAH-rich asphalt can only be thermally processed (also incinerated as a form of removal) provided that:

- the PAH present will be destroyed, and
- is certain that the mineral fraction is eventually recycled, and
- the energy content is utilised or the hydrocarbons produced are recovered.

5.2.5 Landfilling

Under the Besluit stortplaatsen en stortverboden afvalstoffen(Bssa), Article 1, first paragraph, category 34, both non-tar (PAH-poor) asphalt (under 34a) and tar-containing (PAH-rich) asphalt (under 34b) are subject to a dumping ban.

5.3Substances of very high concern (SVHCs) and other substances of concern

The SVHCs in the table below are known[5] to be present in asphalt in concentrations above the concentration limits in [Table 1] in the chapter 'SVHCs and other substances of concern'. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is listed in the POPs Regulation or on the candidates, restriction or

REACH authorisation list. See also [Section 3.2 'Legislation to phase out and restrict use'] of the chapter 'SVHCs and other substances of concern'.

Waste Processor Acceptance and Processing Policy

Waste treatment operators must pay attention to SVHCs in acceptance and processing procedures (A&V), see [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or

5Source: SGS Intron, 2019, SVHC in waste.

air. See also the webpage ‘Addressing substances of very high concern’ (IPLO) and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [Chapter on waste or non-waste].

Overview of relevant SVHCs

The table below provides a (non-exhaustive) list of SVHCs that may be present in asphalt in excess of the concentration limit in [Table 1] of the chapter ‘SVHCs and other substances of concern’. The minimum standard in the CMP already takes into account the presence of PAHs in asphalt.
This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

SVHC	Regulations	Waste and description
Polycyclic aromatic hydrocarbons (PAHs)	REACH Annex XVII (restriction 50)	in milled asphalt (plaice and granules).

6. Other information

6.1Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term ‘waste’ should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

For asphalt, here is a number of specific points for attention in the assessment of waste or non-waste. These points do not describe the full assessment framework.

Always waste sub-stream

The maximum composition values of building materials in the Soil QualityRegulation 2022and the minimum standard always require destruction of the PAH-containing fraction in PAH-rich asphalt. For this reason, PAH-rich asphalt is always a waste material when the material is transferred to another person, regardless of the behaviour and intentions of the holder.

Recycling granulate (end-of-waste regime)

For recycling granulate, the Dutch End of Waste Status Determination Regulation-ofRecycling Granulateis in force, which lays down criteria determining when recycling granulate ceases to be classified as waste. All granules (granulated) resulting from crushing or milling asphalt fall within the scope of the Arrangement. Reclaimed asphalt that meets the criteria of the scheme is no longer waste.

This scheme is the assessment framework to determine whether recycling granulate resulting from the crushing or milling of asphalt is waste. Assessments of the waste status of reclaimed asphalt on other grounds are not permitted.

Non-waste on the market

In all cases, when asphalt is placed on the market as non-waste (either directly or after recovery or not), it must comply as a minimum with the applicable product regulations. This includes, for example, REACH and the POPs Regulation.

6.2Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to ‘potentially recoverable critical materials’.

Asphalt is not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report ‘Recovery potential secondary critical raw materials based on waste plans in the LAP3’ (TNO, 2023).

[Section 2.3.6 ‘Critical materials and high dignity’] of the CMP’s ‘Recycling of waste’ chapter provides more information on critical materials in relation to waste treatment.

6.3BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

6.4Mention of source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022a). [*Specifying conditions that prevent recycling as a minimum standard*].
- RoyalHaskoning DHV (2022b). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

No developments are currently foreseen that could lead to changes in the assessment frameworks of this waste plan.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Waste plan end-of-life vehicles

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading 'Assessment frameworks'.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a 'content' or 'bookmarks' in the browser or the PDF reader's left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the Tools section.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can't read the text or images? Contact 088-7977102 or the helpdesk's contact form.

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Waste plan end-of-life vehicles

This Waste Plan provides the assessment framework that competent authorities must take into account when granting permits for waste treatment and cross-border transport of end-of-life vehicles and end-of-life two-wheeled motor vehicles.

Synopsis

The first part of this plan contains the assessment frameworks for the authorisation of the processing and cross-border transport of end-of-life vehicles and end-of-life two-wheeled motor vehicles. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Future plans

Assessment frameworks

This section of the plan describes how companies must process end-of-life vehicles and end-of-life two-wheeled motor vehicles, including the focus points. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an

environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
Car wrecks	End-of-life vehicles include end-of-life vehicles of passenger cars, light commercial vehicles (up to 3 500 kg), and three- and four-wheeled mopeds.
End-of-life two-wheeled motor vehicles	End-of-life two-wheeled motor vehicles include mopeds, motorcycles and mopeds.

For the definitions of 'end-of-life vehicle' and 'end-of-life two-wheeled motor vehicle', please refer to Annex 1 of the Environmental activities decree (Bal).

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The paragraphs below address the following aspects that are relevant for the authorisation of the processing of end-of-life vehicles and end-of-life two-wheeled motor vehicles:

- mixing permission (2.1)
- minimum standard (2.2)

2.1Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check whether mixing requires a permit.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
1	GA	End-of-life vehicles that are hazardous waste	End-of-life vehicles are in principle hazardous waste after delivery because they contain liquids or components that are hazardous waste.

2	Nga	End-of-life vehicles other than hazardous waste	End-of-life vehicles that do not contain or no longer contain liquids or components that are hazardous waste.
112A	GA	Other hazardous waste that cannot be disposed of in a landfill in accordance with the Landfills and Waste Dumping Prohibitions Decree or a minimum standard in the Circular Materials Plan	End-of-life two-wheeled motor vehicles are in principle hazardous waste after issue because they contain liquids or components that are hazardous waste.
112B	Nga	Other non-hazardous waste that cannot be disposed of in a landfill in accordance with the Landfills and Waste Dumping Prohibitions Decree or a minimum standard in the Circular Materials Plan	End-of-life two-wheeled motor vehicles not containing or not containing fluids or components that are hazardous waste.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 'Keeping waste separate'].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

This plan does not contain specific provisions for end-of-life vehicles and end-of-life two-wheeled motor vehicles that should be taken into account by the competent authority in derogation from the general assessment frameworks.

[Section 5.1.2] explains the concrete meaning of both the legislation and the assessment frameworks of the CMP for allowing the mixing of end-of-life vehicles and end-of-life two-wheeled motor vehicles.

The joint storage of end-of-life vehicles is not considered to be mixing.

2.2 Minimum standard

The processing of end-of-life vehicles and end-of-life two-wheeled motor vehicles must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guide on the use of minimum standard].

The following minimum standards apply to the processing of end-of-life vehicles and end-of-life two-wheeled motor vehicles:

Waste	Minimum standard

End-of-life vehicles and wrecks of two-wheel motor vehicles	Dismantling according to the requirements of §4.47 of the Environmental Activities Decree and then:
	• processing of the disassembled components and drained fluids in accordance with the minimum standards set out in relevant other waste or chain plans;
	• insofar as parts and drained fluids are not covered by a CMP waste plan, processing should be assessed against the [waste hierarchy] as described in section 'guidance tools';
	• shredding of the remaining end-of-life vehicle according to the provisions of paragraph 4.31 of the Bal and then;
	  o processing of released metals (and other mono-flows) according to the respective waste plans;
	  o processing of the remaining 'car shredding waste' and 'other shredding waste'[6] according to the provisions of the [Shredder waste Waste Plan]. A maximum of 5% of the input to the shredder site is allowed to be deposited. This means that an application for authorisation for a processing plant for end-of-life vehicles and end-of-life two-wheeled motor vehicles must demonstrate that the process throughout the entire chain (i.e. from the first shredder to plants processing separated fractions of the shredder) does not lead to residues exceeding the aforementioned 5% of the original input.

Extended producer responsibility scheme

End-of-life vehicles are subject to an extended producer responsibility scheme (see the Decree on end-of-life vehicle management). This includes minimum requirements for processing that producers (including importers) must meet. This is subject to a dedicated monitoring structure. The decision also has its own terms (e.g. 'reuse as a product'). The requirements and concepts of the End-of-Life Vehicles Management Decree, rather than the concepts used in the CMP, apply to the assessment of producers' compliance with the extended producer responsibility scheme.

Control rules

Company permits for the shredding of end-of-life vehicles or two-wheeled motor vehicles are subject to a rule on guidance. This SME Guidance Document requires that these companies distribute the waste arising from the car shredding or the other shredding evenly throughout the year to a processor who processes the waste in accordance with the provisions of the [Shredder waste waste plan]. This guidance should only be missing when the shredder waste itself also processes automotive shredder waste or other shredder waste according to the provisions of the waste plan.

'Distributed evenly over the year' means offering a regular amount of shredder waste at least once a month, preferably every two weeks.

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 'Explanation of the minimum standard'].

Wastes containing certain SVHCs

SVHCs may be present in the waste. Both the legislation described and the assessment frameworks of [waste mixing chapter] and [chapter on SVHCs and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

6Annex II of the Environmental Activities Decree distinguishes between 'vehicle shredder waste' (restream of shredding end-of-life vehicles) and 'other shredding waste' (residual stream from shredding other objects). Both are generated when processing the waste included in this plan. See further [Shredder waste waste plan].

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing the authorisation of transfer of end-of-life vehicles and end-of-life two-wheeled motor vehicles. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes with certain SVHCs (cross-border transport)

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [Section 5.3 'SVHCs and other substances of concern'] of this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Relation with other waste plans

For the sub-streams in this waste plan where other waste plans are referred to for processing, no assessment framework for the transfer is included in this section.

Scope of the assessment framework, grounds and conditions The

assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection

Preparing for reuse	If the degree of recovery does not justify the shipment. • This is the case for end-of-life vehicles where more than 5% (by weight) are landfilled or otherwise disposed of. • For two-wheeled motor vehicles, this is the case when a non-reasonable portion of the shipped waste is landfilled or otherwise disposed of. (Grounds for objection 12(1)(b) and (i) EVOA (Article 12(1)(g) EVOA)).
(Interim recovery followed by) recycling	If the degree of recycling does not justify the shipment. • For end-of-life vehicles, this is the case when less than 85 % by weight is recycled or/and more than 5 % by weight of the end-of-life vehicles transferred is landfilled or otherwise disposed of. • For two-wheeled motor vehicles, this is the case when a non-reasonable portion of the shipped waste is landfilled or otherwise disposed of. (Grounds for objection 12(1)(b) and (i) EVOA (Article 12(1)(g) EVOA)).
Other recovery	This is because higher-quality processing is possible (objection ground Article 12(1)(a), (b) and/or (n) EVOA (Article 12(1)(a) and, for transfers to the Netherlands, Article 12(1)(k) EVOA)).

Delete for which the movement is *not* allowed	**Specific provisions and grounds for objection**
All forms of (preliminary) disposal except landfilling	This is because higher-quality processing in the form of recovery is possible for at least a large proportion of the materials (the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground of objection Article 11(1)(a) EVOA)). In addition, for shipments of car wrecks to and from the Netherlands, the waste must be partially recovered under Directive (EC) 2000/53. In the case of transfer of car wrecks to the Netherlands, the treatment must also comply with the provisions of the Decree on end-of-life vehicle management.
Landfill	This is because higher-quality recovery processing is possible or required (see also for transfers for other disposal); and • national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. [Section 6.1 'Waste or non-waste'] provides specific information on this.

4. Explanatory notes on the scope

This plan concerns end-of-life vehicles and two-wheeled motor vehicles. Annex I of the Balcontains definitions of 'end-of-life vehicle' and 'end-of-life two-wheeled motor vehicle'.

An end-of-life two-wheeled motor vehicle is a two-wheeled motor vehicle which is a moped or a motorcycle and which is a waste material.

The definition of end-of-life vehicle covers:

- commercial vehicles with a weight not exceeding 3 500 kg and which are waste;
- passenger cars that are waste; and
- Mopeds which are three- or four-wheel motor vehicles and are waste.

Mopeds, motorcycles, commercial vehicles and passenger cars are intended to be regulated under Article 71(1) of the Road Traffic Act 1994. In the case of mopeds, the number of wheels is decisive in determining whether the motor vehicle is an end-of-life vehicle or a two-wheeled motor vehicle.

Website: What is an end-of-life car? (Waste Circular), find out more about how to determine whether a vehicle is an end-of-life vehicle and what the trade-offs should be.

End-of-life vehicles are released both from households and businesses. End-of-life vehicles are, in principle, hazardous waste when delivered to a car dismantling company, as they contain liquids and components that are hazardous waste. It is only after removal of these components and fluids from the end-of-life vehicle that a end-of-life vehicle ceases to be hazardous waste.

No specific waste categories are currently listed in Annex II to the Bal for end-of-life two-wheeled motor vehicles, which means that these end-of-life vehicles fall under waste categories 112A and B. Even in the case of end-of-life two-wheeled motor vehicles, a distinction must be made between hazardous and non-hazardous waste. As with end-of-life vehicles, hazardous waste is considered first in the case of end-of-life two-wheeled motor vehicles if it is collected or taken in. Non-hazardous waste will only be considered to exist once the end-of-life vehicle no longer contains liquids or components that are hazardous waste.

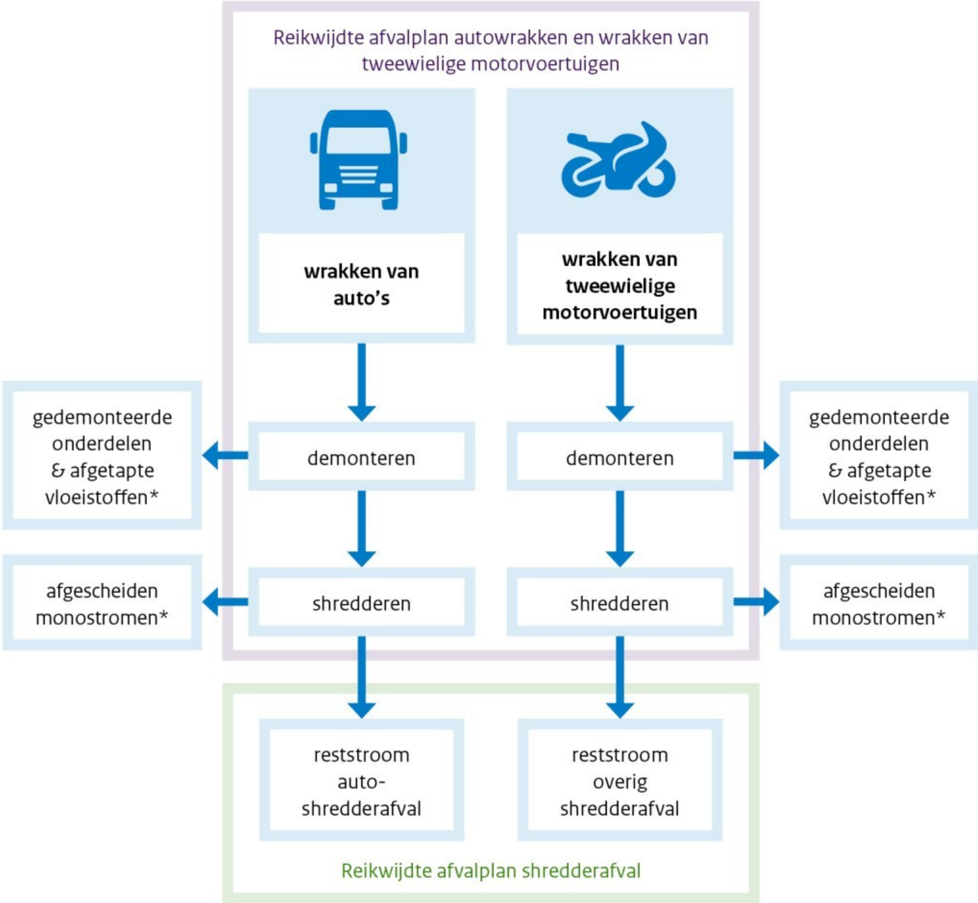
The dismantling of end-of-life cars and end-of-life two-wheeled motor vehicles is an environmentally harmful activity and must be carried out in accordance with the requirements of the Decree on activities in the living environment. More information on the dismantling of end-of-life vehicles can be found on the 'Waste requirements for end-of-life vehicles's and two-wheeled motor vehicles' page (Waste Circular). More information on requirements for the issue, storage and intermediate storage of end-of-life vehicles and end-of-life two-wheeled motor vehicles is also available on this page.

Waste plan scope

This waste plan concerns end-of-life vehicles and two-wheeled motor vehicles. Parts and fluids released during disassembly should be handled according to the minimum standards of relevant waste plans. After disassembly, these materials are in the scope of the relevant waste plans. Where parts and fluids are not covered by a waste plan, the treatment must be assessed against the [waste hierarchy] as described in section 'guidance tools'.

Disassembled end-of-life vehicles and two-wheeled motor vehicles are shredding according to the requirements of the Bal. This shredding consists of the separation of metals (sometimes including other fractions) and the transfer of a residual stream of 'shredder waste'. The residual stream that remains must be processed in accordance with the minimum standard set out in the [Shredder waste waste plan]. The figure below shows the treatment processes that fall within the scope of the End-of-Life Vehicles (ELV) and End-of-Life Two-Wheeled Motor Vehicle (ELV) Waste Plan.

Figure 1 – Illustration of scope of waste plan and shredder waste plan



*Verwerken volgens de minimumstandaard van relevante afval- of ketenplannen. Indien de materialen niet onder een afval- of ketenplan vallen, moet de verwerking worden getoetst aan de afvalhiërarchie in het CMP.

Similar waste but under different plans

The wastes listed below are slightly similar to those included in this plan, but covered by other plans (not exhaustive). Other waste is parts or fluids which are dismantled from end-of-life vehicles or two-wheeled motor vehicles (this list is not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Batteries, accumulators	[Waste plan batteries]
Shredder waste (being the residual flow left on shredding of end-of-life cars and two-wheeled motor vehicles after separation of metals, in particular, from the shredding equipment)	[Shredder waste waste plan]
Tyres	[Tyres and rubber waste plan]
Oil filters	[Waste plan oil-containing waste]
Waste oil	[Waste plan waste oil]

PCB-containing devices	[Waste plan PCB-containing waste]
Cooling, anti-freezing and windscreen washer fluid	[Waste plan solvents and glycols]
Electrical and electronic components of end-of-life vehicles such as navigation, radios and speakers	[Waste plan for electrical and electronic equipment]
Mercury-added components	[Waste plan mercury and mercury-containing waste]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 160104*; 160106.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for allowing the mixing of end-of-life vehicles and end-of-life two-wheeled motor vehicles. In the case of 'mixing', please see [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep end-of-life vehicles and end-of-life two-wheeled motor vehicles separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping industrial waste and hazardous waste separate *(general)*	Companies must always keep end-of-life cars and end-of-life two-wheeled motor vehicles separate and dispose of them separately, unless they have a mixing permit *(Article). 3.195 and art. 3.196 Bal and 'mixing of waste' chapter*. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to 'disposers' before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Companies must always keep end-of-life cars and end-of-life two-wheeled motor vehicles separate and dispose of them separately by waste category *(Art. 3.39 Bal in combination with 'Keeping corporate and hazardous waste separate' chapter*. A company that wants to mix end-of-life cars or end-of-life two-wheeled motor vehicles with other waste needs a permit. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep end-of-life cars and end-of-life two-wheeled motor vehicles separated by waste category *(Art. 1b. Waste Collection Decree)*. This applies both to end-of-life vehicles that are hazardous waste and to end-of-life vehicles that are not hazardous waste. Including at

	end-of-life two-wheeled motor vehicles must be kept separately from hazardous waste from non-hazardous waste. No derogation is allowed.
Municipal collection *(household waste)*	End-of-life vehicles can also be released from private individuals. Under Article 6 Decree on end-of-life vehicle management, municipalities are required to determine in the local waste regulations or environment plan to whom individuals can issue end-of-life vehicles. Furthermore, the municipality has no obligation to separately collect end-of-life vehicles from private individuals.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

• [Section 4.2.2 'Mixing of hazardous waste']

Check whether the mixing of end-of-life vehicles is covered by any of the section's assessment frameworks. Moreover, the storage of end-of-life vehicles is not a mixing operation but storage.

The essence of allowing the mixing of end-of-life cars and end-of-life two-wheeled motor vehicles is that after mixing, processing in accordance with the minimum standard should remain possible. As the end-of-life vehicles have to be dismantled, the mixing of end-of-life vehicles or end-of-life two-wheeled motor vehicles (within waste categories 1 and 112A, between these waste categories or with other waste or non-waste) should not take place.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Reuse does not imply waste treatment. End-of-life vehicles and two-wheeled motor vehicles are by definition waste and therefore re-use (as defined in the definition of 're-use') is not possible.
Preparing forre-use	Allowed for end-of-life vehicles or parts of end-of-life vehicles (after dismantling) based on the minimum standard as long as there are no (legal) obstacles to preparing for re-use.
Recycling and other recovery	The minimum standard, in accordance with the CMP Living Environment Law (Activities) Decree and other waste plans, aims to recycle parts and materials constituting the wrecks to the maximum extent possible.
Incineration as a formof disposal	Incineration is not permitted for end-of-life vehicles and for end-of-life two-wheeled motor vehicles.
Landfill	The deposit of wrecks of cars or two-wheel motor vehicles is not permitted. End-of-life vehicles are subject to a dumping ban.

5.2.1 Preparing for reuse

The Competent Authority may grant a permit for treatment which leads to the reuse of end-of-life vehicles or wrecks of two-wheel motor vehicles. This processing operation complies with the minimum standard. The preparation for reuse of parts of end-of-life vehicles is not subject to authorisation. For more information, see Article 3.190 of the Environmental Activities DecreeBesluit activiteiten.

5.2.2 Recycling and other recovery

The minimum standard for end-of-life vehicles and two-wheeled vehicles is aimed at dismantling parts, sorting disassembled materials, shredding the remainder of the end-of-life vehicle or two-wheeled motor vehicle and separating raw materials. These processes must take place as indicated in the Decree on activitiesliving environment. The policy, as elaborated, inter alia, in the End-of-Life Vehicles (Management) Decree, aims to promote recovery of the various materials and components of end-of-life vehicles and end-of-life two-wheeled motor vehicles. Preferably in the form of component reuse and material recycling. It is important to deal with dangerous substances and components in a responsible way.

Dismantling of parts

In a car dismantling company, parts are dismantled for sale. They are handed over and prepared for reuse, recycling or other recovery. There are also other mandatory materials to be disassembled. Paragraph 4.47 of the Decree on activitiesliving environmentimplements the EU End-of-Life Vehicles Directive and lays down requirements for the dismantling of end-of-life vehicles and end-of-life two-wheeled motor vehicles. The dismantling company must drain all the fluids and disassemble the following components within two weeks of receiving end-of-life cars and end-of-life two-wheeled motor vehicles:

- engine oil,
- transmission oil,
- gear oil,
- oil from differential
- hydraulic oil,
- brake fluids,
- coolants,
- screen washer fluids,
- air-conditioning fluids,
- liquid fuels,
- liquefied or compressed gas tanks (LPG tanks, natural gas and hydrogen tanks),
- soil-threatening liquids;
- batteries (all of which with content),
- oil filters,
- capacitors with PCB or PCT,
- batteries, and
- explosive parts not neutralised (with the exception of electric airbags and belt tensioners).

Other materials that need to be dismantled (but not necessarily within two weeks of receipt of the wreck) are:

- tyres, glass[7] and large plastic parts if these materials are not separated for recycling in the shredding process,
- metal parts containing copper, aluminium or magnesium, unless these materials are separated out in the shredding process;
- catalytic converters,
- parts indicated as containing lead, mercury, cadmium or hexavalent chromium, and
- electric airbags and belt tensioners, unless neutralised.

The inclusion of the rules for dismantling end-of-life two-wheeled motor vehicles in the Environment (Activities) Decree is a consequence of the Green DealCollection, dismantling andRecycling of Mopeds and Mopeds. This Green Deal aims to increase recycling by reducing regulatory burdens.

Processing

Parts and fluids released during disassembly should be handled according to the minimum standards of relevant waste plans. When components and fluids are not

subject to a waste plan, the treatment must be assessed against the [waste hierarchy] as described in section ‘guidance tools’.

After the removal of all parts that need to be dismantled, the remaining end-of-life car or two-wheeled motor vehicle will be shredded. This processing operation must be carried out in accordance with ‘§ 4.31. Shredding of end-of-life vehicles’ from the Decree Living Environment Activities. In the shredding process, at least the metals are separated and possibly other materials are also separated. What is not sorted by the shredder (the residual stream) is ‘shredder waste’. These waste streams must be further processed in accordance with the provisions of the [Shredder waste waste waste plan].

7Glass can be dismantled and recycled. However, much glass is not dismantled and ends up in the mineral fraction through the Post Shredder Treatment (PST). This fraction is recycled, but not as glass (RoyalHaskoning DHV, 2022).

When processing end-of-life vehicles and end-of-life two-wheeled motor vehicles, attention must be paid to controlled substances (refrigerants). These have to be processed in accordance with the Ozone Regulation (EC) No 1005/2009and the F-gas Regulation Regulation (EC) No 517/2014.

In addition, the Decree on end-of-life vehicle managementapplies to the treatment of end-of-life vehicles. Other terms and definitions are used in this Decision for forms of recovery than in the Environmental Management Act. The Decree on end-of-life vehicle management therefore defines and defines the terms contained therein. The objectives set out in the Decision are also linked to those terms and definitions. Finally, end-of-life vehicles are subject to an extended Producer responsibility, details are given in [Section 6.2 'Extended producer responsibility'] of this waste plan.

Shredder waste further processing

For the purpose of submitting shredder waste to a post-shredder technique for further processing, the shredder waste must take into account the provisions under the heading 'Control provisions' of the minimum standard. These control rules have been included for the following reasons:

- In the past, shredder waste processors have faced an irregular influx of materials. This led to a shortage of waste deliveries to processors at one time and an excessive amount at another time, which led to the landfill of shredder waste. The landfill of shredder waste is environmentally sound and endangers the achievement of European targets for the treatment of end-of-life vehicles. To prevent this, guidance material must be attached to permits for facilities that shred end-of-life vehicles and to facilities that subsequently process the shredder waste. In this way, post-shredder (PST) facilities are used to the greatest extent possible, minimising the dumping of vehicle shredder waste. The use of guidance in general is described in section 2.4.2 'the minimum standard consists of several steps' of the [Guidance on the use of minimum standard].
- Vehicle shredder waste and other shredder waste should be kept separate from each other. This is because end-of-life vehicles are subject to specific recovery and recycling targets. Currently, the minimum standards for vehicle shredder waste and other shredder waste remain the same, but in the future different provisions for the processing may apply. The shredder waste must therefore be treated separately from each other. See also the [Shredder waste waste plan].
- The Shredder Waste Waste Plan states that a maximum of 5% of the shredder waste may eventually be landfilled. This may be an inert fraction only. This 5% should be calculated on the basis of the total input of the first shredder (also taking into account third-party deposition of (parts of) fractions sold for further processing). Therefore, the processor's authorisation for end-of-life vehicles and two-wheeled motor vehicles must be subject to a control rule for this purpose. See section 2.4.2 'The minimum standard consists of several steps' of the [Guidance on the use of minimum standard] or the [Shredder waste waste plan] for further information.

The use of guidance in general is described in section 2.4.2 'the minimum standard consists of several steps' of the [Guidance on the use of minimum standard].

5.2.3 Incineration as a form of disposal

Incineration is not permitted for end-of-life vehicles and for end-of-life two-wheeled motor vehicles because recycling is the minimum standard for some of the materials present.

5.2.4 Landfilling

Under the Landfills and Waste Dumping Prohibitions Decree(Bssa), Article 1(1), category 13, end-of-life vehicles are subject to a dumping ban. End-of-life vehicles are defined as described in Annex 1 of the Living Environment Law (Activities) Decree), which also includes parts of such end-of-life vehicles.

End-of-life two-wheeled motor vehicles are not subject to a specific dumping ban, such as end-of-life vehicles. However, a dumping ban is in force for metals (the main component of such wreck) through category 38. Furthermore, dumping is not permitted according to the minimum standard of this waste plan.

In this shredding of end-of-life cars or two-wheeled motor vehicles, metals are separated (sometimes other fractions) and a residual stream remains 'shredder waste'. This waste stream must be processed according to the [Shredder waste waste plan]. This waste plan states that a maximum of 5% of the input stream to the shredder (i.e. end-of-life vehicles) may eventually be landfilled. This 5% should be calculated on the basis of the total input from the first shredder and on the total end-of-life vehicle processing. Therefore, a control requirement must be included in the authorisation of the processor of end-of-life vehicles or two-wheeled motor vehicles.

5.3Substances of very high concern (SVHCs) and other substances of concern

The SVHCs in the table below are known[8] to be capable of preventing end-of-life vehicles and end-of-life two-wheeled motor vehicles in concentrations above the concentration limit value in [Table 1] of chapter 'SVHCs and other substances of concern'. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 'Legislation to phase out and restrict use'] of the chapter 'SVHCs and other substances of concern'.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the 'Addressing Substances of Very High Concern' (IPLO) page and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

The risk of SVHCs in end-of-life vehicles and two-wheeled motor vehicles depends on the material used and the parts. For information on SVHCs in specific car parts, such as batteries and accumulators, tyres and waste oil, see the relevant waste plans. In other parts of end-of-life vehicles and two-wheeled motor vehicles presented for processing as homogeneous waste (e.g. a batch of fuel hoses), SVHCs may be present above the concentration limit given in [Table 1] of chapter 'SVHCs and other substances of concern', see the table below. The overview is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

SVHC	Regulations	Waste and description
N-methylacetamide	REACH Annex XIV (entry 30)	In parts of an electrical system of cars.
Formaldehyde	REACH Annex XVII (restriction 28, 72, 77)	In transmission components, the electrical system, the engine block, in door panels, the braking system and in the insulation

8Source: SGS Intron, 2019, SVHC in waste.

		foam of cars.
Tris(2-chloroethyl) phosphate (TCEP)	REACH Annex XIV (entry 13) REACH Annex XVII (restriction 30)	In the plastic parts of cars.
Zirconia Aluminosilicate Refractory Ceramic Fibres (ZrAl-RCF)	REACH Candidate List	In the plastic parts of cars.
Bis(2-methoxyethyl) ether	REACH Annex XIV (entry 25) REACH Annex XVII (restriction 30)	Used as a solvent in automotive maintenance products, also known as diglyme.
1,2-bis(2-methoxyethoxy)ethane	REACH Annex XVII (restriction 30)	As a component in brake fluid. Also known as triglyme.

6. Other information

6.1 Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term ‘waste’ should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

For (parts of) end-of-life vehicles and end-of-life two-wheeled motor vehicles, here is a number of specific points for attention in the assessment of waste or non-waste. These points do not describe the full assessment framework.

Preparing for reuse

When a holder discards or intends or is required to discard end-of-life vehicles or end-of-life two-wheeled motor vehicles, this is waste. The recipient then determines the waste treatment that can be used, in accordance with laws, regulations and policies, including those contained in this CMP. If, after simple operations, a part of an end-of-life car or two-wheeled motor vehicle can be brought back to the market, this entails preparation for reuse. Examples of these operations are disassembling, checking for damage, cleaning and then determining for which car or two-wheeled motor vehicle the parts are intended. An important point to keep in mind here is that it is sufficiently certain that the components will actually be used again. The assessment of preparation for re-use will require a case-by-case assessment based on all the facts and circumstances of each case. Once the preparation for re-use is completed, an assessment of end-of-waste status can be made on the basis of the conditions set out in Article 1.1(6) Environmental Management Actand [Chapter on waste or non-waste].

EU waste status guide

Experience has shown that in some cases there is uncertainty in the case of end-of-life vehicles and when they are not. In order to minimise this uncertainty, a guidance document on the concept of end-of-life vehicles has been developed at European level, the CORRESPONDENCE’ GUIDELINES No 9 - Shipments of Waste Vehicles. In addition, information on when the vehicle is scrap can be found on the website What is an end-of-life vehicle? – Waste Circular.

Non-waste on the market

In all cases, when parts of end-of-life vehicles or end-of-life two-wheeled motor vehicles are placed on the market as non-waste (either directly or after recovery or otherwise), they must comply as a minimum with the applicable product legislation. These include REACH, the POPs Regulation, the F-gases Regulation and the requirements arising from the Commodities Act.

6.2Extended producer responsibility

Extended producer responsibility

Manufacturers of cars have extended producer responsibility (EPR) for managing cars in their end-of-life stages. EPR schemes aim to ensure that those placing certain substances, mixtures or products on the market bear, in whole or in part, the financial or organisational responsibility for waste management of those substances, mixtures or products. Important aspects of this waste management are: the level and method of collection and the treatment of the waste. An EPR scheme may take the form of a ministerial scheme or a decision. In addition, it may be a decision establishing a generally binding declaration (AVV) of a waste management fee agreement. These different forms of EPR schemes may co-exist, and thus be relevant for one product stream and the resulting one.
waste. For further explanations on the RPV, please refer to the ExtendedProducer Responsibilitypage of Waste Circular.

Cars are subject to the Decree on end-of-life vehicle management and a 'Generally binding declaration' (AVV), granted to the Stichting Auto & Recycling. This is a voluntary EPR. The Stichting Auto & Recycling has set up a system for the collection (and processing) of end-of-life vehicles. It represents the main manufacturers and automotive industry associations. Producers and importers are required to pay a waste management fee to this foundation and to report to it cars placed on the market for the first time. This foundation established Auto Recycling Nederland BV (ARN). ARN is responsible for the implementation of the AVV and concludes contracts with car dismantling companies, whereby end-of-life vehicles are taken over, disassembled and processed free of charge under the terms of ARN. More information on the EPR for end-of-life vehicles can be found at Tyres and cars - Waste Circular.

EPR control rules

The producer responsibility system prepares at least 95% by weight of the end-of-life vehicles for reuse or recovery, of which at least 85% are either prepared for reuse or recycled. This objective is in line with the European objective of the End of Life Vehicles Directive. In order to continue to meet these objectives, it is necessary to ensure that end-of-life vehicles and vehicle shredding waste are properly treated.

6.3Quality Care Disassembly (KZD)

The ARN and the dismantling industry have developed a professional standard as a quality management system for the vehicle dismantling industry, called: Kzd (qualityCare). Through this independent quality management system, the vehicle dismantling industry attempts to consolidate its professional standards. A KZD standard has been developed, setting out requirements for disassembly, occupational health and safety legislation, material recycling and quality. Companies with a KZD certificate are expected to demonstrate that the business is well-managed, working under legal environmental requirements and current quality standards. KZD is subject to verification by the independent certifying bodies SGS and Kiwa. More information on KZD can be found at KZD – Foundation for Quality Care Disassembly.

6.4Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to ‘potentially recoverable critical materials’.

End-of-life vehicles and two-wheeled motor vehicles according to the report ‘Recovery potential secondary critical raw materials based on waste plans in the LAP3’ (TNO, 2023) means the following potentially recoverable critical materials: germanium, indium, cobalt, lithium, titanium, silicon, tungsten, aluminium and platinum group of metals[9]. For the purpose of recovery, the report considers the waste to be promising. The study also looked at techniques to recover critical materials and where they are available within the EU. Waste processors can use this overview to make choices for developing techniques within the Netherlands or, for example,

9The platinum group metals (PGM) includes platinum, palladium, rhodium, osmium and ruthenium, in addition to platinum.

to cooperate with countries within the EU that have experience with the technique and/or are equipped with capacities to recover certain materials.

[Section 2.3.6 ‘Critical materials and high dignity’] of the CMP’s ‘Recycling of waste’ chapter provides more information on critical materials in relation to waste treatment.

6.5BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [*report*] presents the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

6.6Relevant background documents on the CMP website

The following documents and reports are available on the CMP website and link to the contents of this waste plan:

- RoyalHaskoning DHV (2022a). [*Specifying conditions that prevent recycling as a minimum standard*].
- RoyalHaskoning DHV (2022b). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].

- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

The revision of the European Directive on End-of-Life Vehicles is currently ongoing. The European Commission has proposed a Circular Vehicles Regulation, which will repeal the End-of-Life Vehicles Directive. The Netherlands is committed to an ambitious Regulation. Efforts will be made to improve the circular business models, link design issues with processing, increase mandatory recycled content for certain materials and improve recycling efficiency. This may lead to a revision of the End-of-Life Vehicles (Management) Decree and to a change in the minimum standards set out in this plan in the future.

Annex II of the Bal currently does not have a specific waste category for ‘end-of-life two-wheeled motor vehicles’. The added value of adding a waste category for end-of-life two-wheeled motor vehicles to the list of waste categories in Annex II to the Bal is examined.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Waste plan batteries

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

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Waste plan batteries

This waste plan provides the assessment framework that competent authorities should take into account when granting waste treatment permits and cross-border battery transport.

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of batteries. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Waste assessment frameworks

This section of the plan describes how companies should process batteries and what the focus is on them. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The demarcation is based on the scope of Regulation (EU) 2023/1542(hereinafter: Batteries Regulation). Where 'batteries' are mentioned in this waste plan, 'waste batteries' can be read.

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
Batteries	• All categories of batteries are covered (lead-acid batteries, nickel cadmium, lithium batteries and other waste batteries). • Disassembled battery cells and battery modules. • Batteries are also batteries. The term batteries is therefore the sole term used in this plan. • Batteries can contain acids and heavy metals, such as zinc, cadmium, nickel, mercury, cobalt and lead (compounds).

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The following paragraphs address the following aspects that are relevant to the authorisation of the processing of batteries:

- mixing permission (2.1)
- minimum standard (2.2)

2.1Mixing of waste

Mixing is designated in the Environmental activities decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check whether the mixing operation requires a permit.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories. The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
82	GA	Lead-acid batteries and accumulators	Lead-acid batteries

83A	GA	Batteries referred to in the Order on battery management 2008that are hazardous waste, with the exception of lead-acid batteries and accumulators	All batteries other than lead-acid batteries classified as hazardous waste These include nickel cadmium batteries, lithium batteries and mercury-containing batteries.
83B	Nga	Batteries as referred to in the Order on battery management 2008 that are not hazardous waste, with the exception of lead-acid batteries and accumulators	All batteries other than lead-acid batteries non-hazardous waste, such as alkaline batteries.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 'Keeping waste separate'].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

This plan contains the following specific provisions for batteries, which the Authority must take into account in derogation from the general assessment frameworks:

Cat. Bal	Allowing mixing in relation to the waste categories
83A and 83B	The mixing of nickel cadmium batteries, lithium batteries and other waste batteries within waste category 83A or 83B or between these waste categories can only be authorised by the Authority if these batteries are subsequently processed in accordance with the [minimum standard].

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of batteries.

2.2Minimum standard

Batteries must be processed in accordance with the following minimum standards. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the processing of batteries:

Component flow	Waste	Minimum standard
a	Lead acid batteries	Separation of liquids and acids followed by recycling (see Annex XII of Regulation (EU) 2023/1542)). This means that separation into components is followed by (enumeration cumulatively): • recycling of at least 80% [1] of average weight; • material recovery in accordance with the objectives set out in Part C of Annex XII to Regulation (EU) 2023/1542 [2]; • recycling of acid, lead and other recyclable metals, • recovery of the plastic components, except for the frying industry, • incineration as a form of disposal of waste water; and • landfilling of components that are not suitable for recycling, such as bolts, clamps, and the like (non-metallic).
b	Nickel cadmium batteries	Separation of liquids and acids followed by recycling (see Annex XII of Regulation (EU) 2023/1542)). This includes (list cumulatively): • recycling of at least 80% of the average weight; • material recovery in accordance with the objectives set out in Part C of Annex XII to Regulation (EU) 2023/1542[2]; • recycling of the metals present according to [Metal waste plan]; • When processed, cadmium must be separated into an identifiable stream and recycled as far as possible, as is technically and

		financially feasible.
c	Lithium batteries	Separation of liquids and acids followed by recycling (see Annex XII of Regulation (EU) 2023/1542)). This includes (list cumulatively): • recycling of at least 70%[1] of average weight; • material recovery in accordance with the objectives set out in Part C of Annex XII to Regulation (EU) 2023/1542[2]; • recycling of the metals present according to [Metal waste plan]. It is also allowed to make lithium-ion batteries suitable for use as energy storage.
d	Other waste batteries	Separation of liquids and acids followed by recycling (see Annex XII of Regulation (EU) 2023/1542). This includes (list cumulatively): • recycling of at least 50% of the average weight; • material recovery in accordance with the objectives set out in Part C of Annex XII to Regulation (EU) 2023/1542[2]; • recycling of the metals present according to [Waste plan metals] with the exception of mercury; • mercury must be separated during processing into an identifiable stream that is safely immobilised and disposed of [Waste plan for mercury and mercury-containing waste].
Notes to the table: [1] This percentage shall apply from 31 December 2030 at the latest. Until then, a recycling efficiency of at least 75% for lead-acid batteries and at least 65% for lithium batteries is achieved. [2] Annex XII, Section C of Regulation (EU) 2023/1542 sets out material recovery objectives for cobalt, copper, lead, lithium and nickel to be achieved by 31 December 2027 and 31 December 2031. Until then, no specific minimum material recovery rate applies to these metals, but recovery is desired.		

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 ‘Explanation of the minimum standard’].

Wastes containing certain SVHCs

SVHCs may be present in the waste. Both the legislation described and the assessment frameworks of [Chapter mengen van afvalstoffen] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether the transfer of batteries is permitted. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by ‘nEVOA’. In other cases, only the ‘WSR’ appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term ‘degree of recovery’ is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase ‘any landfilling or other disposal’. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [SVHCs and other substances of concern] in this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Scope of the assessment framework, grounds and conditions for objection

The following assessment framework applies to all battery sub-streams as specified in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. ‘prohibitions’] of the ‘cross-border transport’ section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection to ‘transfer for recovery’ (Article 12 EVOA).The second table indicates the grounds for objection to ‘transfer for disposal’ (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for re-use	If the degree of recovery does not justify the shipment. This is the case where an unreasonable amount of the shipped waste is landfilled or otherwise disposed of (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR)).
(Interim recovery followed by) recycling	If the degree of recovery does not justify the shipment. The degree of recovery is justified if, as a minimum, the average weight of batteries is recycled in accordance with Regulation (EU) 2023/1542 and/or a reasonable proportion of the shipped waste is landfilled or otherwise disposed of (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) of the EWSR).
Other recovery	This is because higher-quality processing in the form of recycling can take place at least at the average weight of batteries in accordance with Regulation (EU) 2023/1542 (objection ground Article 12(1)(a), (b) and/or (n) of the EWSR (Article 12(1)(a) and, for shipments to the Netherlands, Article 12(1)(k) of the EWSR)).

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
All forms of (preliminary) disposal except landfilling	This is because higher-quality processing in the form of recovery is possible (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).

Landfill	This is because higher-quality processing in the form of recovery is possible; and • national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. Specific information is provided in [Section 6 'Waste or non-waste'].

4. Explanatory notes on the scope

This plan concerns batteries. The delimitation is based on the scope set out in Article 1 of Regulation (EU) 2023/1542(the Batteries Regulation). This Regulation applies to all categories of batteries, namely portable batteries, start-up batteries and ignition batteries (batteries), light vehicle batteries, electric vehicle batteries and industrial batteries. Battery cells or battery modules made available on the market for end-use (independently of a battery pack) are also in the scope of the Regulation and thus of this plan.

The Batteries Regulation also applies to batteries incorporated or added to products (with the exception of equipment referred to in Article 1(5) of the Batteries Regulation). Batteries built into an end-of-life vehicle or end-of-life vehicle are first separated in accordance with the requirements of Directive 2000/53/EC(End-of-life Vehicles Directive). Batteries that are collected while incorporated into an end-of-life appliance are isolated in accordance with the requirements of Directive 2012/19/EU(WEEE Directive). After isolation, the batteries are processed in accordance with the minimum standard set out in this plan.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Batteries not covered by the scope of the Batteries Regulation.	Processing according to the [waste hierarchy] as described in section 'guidance tools'.
Batteries in waste electrical and electronic equipment that have not yet been removed from it.	[Waste plan Electrical and electronic equipment]
Batteries in end-of-life vehicles that have not yet been removed from the system.	[Waste plan for end-of-life vehicles]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 090111*; 090112; 160215*; 160601*; 160602*; 160603*; 160604; 160605; 160606*; 200133*; 200134.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1 Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for allowing the mixing of [waste]. In the case of 'mixing', this is described in [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep batteries separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping industrial waste and hazardous waste separate *(general)*	Companies must keep batteries separate by waste category and dispose of them separately from other waste unless they are authorised to mix them *(Art.). 3.195 and art. 3.196 Bal and 'mixing of waste' chapter*. If a company stores larger quantities of portable batteries, car batteries or industrial batteries, it must also keep them separate from other types of batteries of the same waste category and from non-waste, unless a mixing permit has been granted (*Art.*) *3.195 and art. 3.196 Bal and 'mixing of waste'* chapter). The quantities in storage are laid down in Article 3.185 Bal. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to 'disposers' before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Companies must always keep batteries separate and dispose of them separately by waste category *(Art.)*. *3.39 Ball in combination with the 'Keeping corporate and hazardous waste separated' chapter*. Exceptions are limited. These are contained in the [Sections 4.3 and 4.4 'Exceptions'] of the 'Keeping corporate and hazardous waste separated' section of the CMP. If a company wants to mix batteries that it has to keep separate with other waste, it will need a permit. The 'Mixing of waste' section of the CMP and [Section 2.1] of this plan provide the assessment framework for mixing permission. The exception is the mixing of batteries of category 83A with 83B. This is allowed on the basis of general rules, as this is considered a single waste category (*Explanatory notes to Article 3.39 Bal*). The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep batteries that are delivered separately separated by waste category *(Art.)* *1b. Waste Collection Decree)*. This applies to both batteries that are hazardous waste and batteries that are not hazardous waste. No derogation is allowed.
Recycling centre *(bulky household waste)*	The Bal lists 18 wastes for which a waste collection site is responsible (must have or refer a facility itself). Batteries are not among those 18. If the waste collection point adopts batteries, a separate, specific storage facility must be provided unless the mixing permit is granted *(Explanatory notes to the Bal, Article*). [Chapter on separate collection of household waste] specifically addresses separation at the collection point.

Municipal collection *(household waste)*	Municipalities are required to collect hazardous waste separately from households. Batteries can be hazardous waste and can be classified as Small Chemical Waste (SCW). The [hoofdsteak gescheiden afvalstoffen] sets out the duties of municipalities.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority. The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.2 'Mixing of hazardous waste']
- [Section 4.2.4 'Mixing of POP-containing waste'] and/or [Section 4.2.3 'Mixing of waste containing PBT or vPvB substances or substances of 'equivalent care']
- [Section 4.2.5 'mixing prior to or during landfilling']

Always check with all the section's review frameworks whether they apply to battery mixing. Furthermore, joint storage of lead-acid batteries does not involve mixing, as long as the batteries remain intact during storage. The fact that these batteries vary in design and size is irrelevant.

The essence of allowing the mixing of batteries is that processing in accordance with the minimum standard should remain possible after mixing. For batteries, it means that:

- By way of derogation from the 'mixing of waste' chapter, the competent authority can only authorise the mixing of nickel cadmium batteries, lithium batteries and other waste batteries within waste category 83A or 83B or between these waste categories if these batteries are subsequently processed in accordance with the [minimum standard]. This means that the different types of batteries have to be sorted and processed in accordance with the Batteries Regulation.
- For mixing lead-acid batteries (waste category 82) with other batteries (waste category 83A or 83B), the competent authority may also grant a permit as long as this does not cause damage to the batteries and the batteries can still be processed according to the [minimum standard]. This means that the different types of batteries have to be sorted and processed in accordance with the Batteries Regulation. The leakage of lead-acid batteries can release harmful substances.

Provisions in the Batteries Regulation

In addition, companies must comply with the requirements of the Batteries Regulation. Articles 59, 60 and 61 of this Regulation lay down requirements for the collection of different types of waste batteries. Portable batteries, light vehicle batteries and starting, lighting and ignition batteries, industrial batteries and electric vehicle batteries that have been discarded must be collected separately. This applies irrespective of the type, chemical composition, condition, brand or origin of the batteries. The collected batteries must be delivered to authorised processing establishments in accordance with Articles 70 and 73 of the Batteries Regulation. The licensed processor may only merge the batteries it receives if the batteries can still be processed according to the minimum standard. Annex XII, Part A of the Batteries Regulation requires waste batteries to be stored in a way that does not mix with conductive or combustible materials.

Avoid unconscious mixing

A battery is not always easily detectable because it is packed in, for example, electrical and electronic equipment or in plastic or paper products such as greeting cards. This poses a risk of batteries ending up in a leak stream such as PMD, paper and cardboard or residual waste. In addition to the loss of valuable raw materials, this should be avoided due to the risk of burning waste. According to (RoyalHaskoning DHV, 2022), incorrectly collected lithium bakeries from 2022 are the main cause of fire in waste companies. The end user (such as a consumer) is in accordance with Article 63 of the
The Batteries Regulation requires batteries to be <u>discarded</u> in a way that they remain separate from other waste, including mixed municipal waste. Batteries must be returned to shops or to the local authority as SCW.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in section 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Reuse does not imply waste treatment. [Section 6.1 'Waste or non-waste'] describes the possibilities for re-use if known.
Preparing forre-use	Preparation for reuse (within the meaning of the definition of 'preparation for reuse') is permitted according to the minimum standard.
Recycling	Separation of liquids and acids followed by recycling is the minimum standard for all types of batteries. Recycling a minimum percentage of the average weight per type of battery is mandatory.
Other usefulapplication	Other recovery is not allowed as recycling (at least of the metals) is possible.
Incineration as a formof disposal	The incineration of batteries is not allowed as recycling (at least of the metals) is possible.
Landfill	Batteries are subject to a dumping ban.

5.2.1 Preparing for reuse

The Authority may authorise a processing operation that results in the reuse of batteries. This processing operation complies with the minimum standard. The Batteries Regulation distinguishes between reuse, preparation for reuse, preparation for repurposing, repurposing and remanufacturing, see also [Section 6.1 'Waste or non-waste'] of this Waste Plan.

Preparing for re-use, preparing for re-destination and remanufacturing is a waste battery first. These operations are permitted on the basis of the minimum standard.

5.2.2 Recycling

Waste batteries must be processed in accordance with the Batteries Regulation. The following points are non-exhaustive based on the requirements of the Regulation:

- Authorised facilities must prepare all waste batteries that are offered to them for reuse, for reuse or recycling.
- In any case, the processing complies with Annex XII, Part A of the Batteries Regulation. It states, inter alia, that at least the liquids and acids must be removed and that mercury and cadmium must be separated into an identifiable stream during processing.
- Recyclers shall ensure that recycling achieves the recycling efficiency and material recovery targets set out in Part B and Part C of Annex XII to the Batteries Regulation respectively. The European Commission laid down in [delegated act – the deadline of 18 February 2025] the precise calculation of recycling efficiency and material recovery targets set out in the Battery Regulation. In short, the recycling efficiency is the output fractions divided by the input fractions times 100. The input fractions are the collected batteries that a recycling plant receives. The output fractions are the materials resulting from the recycling process that can be used for their original purpose or for other purposes without further treatment and are no longer considered waste.

Lithium batteries

Battery recycling generally uses a combination of different techniques, such as dismantling, shredding and hydrometallurgy (TNO, 2023). Disassembly and shredding separate large metal parts from the 'black mass'. This is also known as the 'active material' and includes cathode and anode materials (materials from which the electrodes are made of a battery). Most precious metals are contained in the electrodes of the lithium batteries. With hydrometallurgy, metals can be extracted by chemical reactions in aqueous solutions. Many metals are present only in small quantities in a lithium battery, which can make the recycling process complex. Techniques for recycling lithium exist but are still in the development phase. It is uncertain when sufficient processing capacity will be available for recycling lithium batteries (RoyalHaskoning DHV, 2022). The material recovery objectives (including lithium) set out in Annex XII of the European Batteries Regulation may contribute to the (further) realisation of processing capacity within Europe.

The current exact recycling efficiency in the recycling of lithium batteries is unknown. However, it is known that the lithium batteries are shredded and/or melted but the lithium is hardly recycled (yet). Metal recycling results in a slag phase for most metals. If it complies with the Soil Quality Decree(Bbk), this inert fraction must be recycled as a building material, for example in soil and hydraulic engineering. If the snails do not comply with the Soil Quality Decree, they must be landfilled.

5.2.3 Other recovery

According to Article 70(1) of the Batteries Regulation, collected waste batteries must not be disposed of or subjected to an energy recovery operation.

5.2.4 Incineration as a form of disposal

According to Article 70(1) of the Batteries Regulation, collected waste batteries must not be disposed of or subjected to an energy recovery operation.

5.2.5 Landfilling

According to Article 70(1) of the Batteries Regulation, collected waste batteries shall not be disposed of. Furthermore, the Landfills and Dumping Bans Decreewaste(Bssa), Article 1(1), Category 9, imposes a dumping ban on batteries. More information on the dumping bans can be found in [Preparing and implementing a dumping ban chapter].

5.3Substances of very high concern (SVHCs) and other substances of concern

SVHCs in the table below are known[10] to be present in batteries in concentrations above the concentration limit in [Table 1] in the chapter 'SVHCs and other substances of concern'. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, theREACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 'Legislation to phase out and restrict use'] of the chapter 'SVHCs and other substances of concern'.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the webpage 'Addressing substances of very high concern' (IPLO) and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

10Source: SGS Intron, 2019, SVHC in waste.

The table below provides a (non-exhaustive) list of SVHCs that may be present in batteries above the concentration limit value in [Table 1] of the chapter ‘SVHCs and other substances of concern’. This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products. The development of new battery types may also change the use of substances of concern.

SVHC	Regulations	Waste and description
Cadmium compounds	REACH Annex XVII (restriction 23)	In nickel cadmium batteries.
Lead compounds	REACH Annex XVII (restriction 30, 63)	In batches of lead acid batteries.
1,2-dimethoxyethane (EGDME)	REACH Annex XVII (restriction 30)	In batches of lithium batteries.
1,3-propanesultone	REACH Annex XVII (restriction 28)	In batches of lithium batteries.
Mercury Mercury compounds	REACH Annex XVII restriction 18 and 18a	In other waste batteries. *N.B. Batches of batteries with a mercury content of 0.1 mg/kg dm or more must be processed in accordance with [Waste plan for mercury and mercury-added materials and products].*

6. Other information

6.1Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term ‘waste’ should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.
For batteries, here is a number of specific points for attention when assessing waste or non-waste. These points do not describe the full assessment framework.

Reuse and repurposing

In order to determine whether batteries are reused or repurposed or waste, it is important to establish the holder’s intention with the batteries. If a holder discards, wants to discard, or has to discard, the batteries are waste. For example, does the holder return the batteries to a return point? This is an indication that the holder is wanting to dispose of it and that the material is waste. If the holder wishes to resell the batteries, this may be an indication that the batteries are not waste but are reused. Whether reuse or reuse is possible or desirable depends on several factors. This includes checking the batteries’ suitability for reuse or repurposing. The batteries must still have sufficient capacity to be reused for the same purpose (reuse) or for another purpose (repurposing). In addition, sufficient certainty must be given to ensure that reuse or repurposing will actually take place. The assessment of whether a material is waste or non-waste will require a case-by-case assessment of the waste status of the material, based on all the facts and circumstances of that case.

Preparing for re-use and preparing for re-destination

When a holder discards or wants or needs to discard batteries, it is a waste. The recipient then determines the waste treatment that can be used, in accordance with laws, regulations and policies, including those contained in this CMP. If, after simple operations, the product can be put back on the market, it can be prepared for re-use or prepared for re-destination[11]. Examples of these operations are checking, repairing or simply cleaning. The assessment of preparation for re-use will require a case-by-case assessment based on all the facts and circumstances of each case. Once the preparation for re-use is completed, an end-of-waste assessment may be carried out on the basis of the conditions set out in Article 1.1(6) Environmental Management Actand [Chapter on waste or non-waste].

Remanufacturing

Remanufacturing[12] involves a wide range of technical operations that can be performed on non-waste batteries or waste batteries. In the case of waste batteries, remanufacturing can be regarded as preparing for re-use or preparing for re-destination. In the case of used batteries that are not discarded, the purpose of remanufacturing is to restore the original performance of a battery. Remanufacturing can then be seen as an extreme case of reuse, where the cells and modules of the battery are dismantled and assessed, and a certain amount of those cells and modules are replaced. The difference between remanufacturing and reuse is that restoring battery capacity to at least 90% of its original nominal battery capacity should be considered as remanufacturing.

Recycling

When a holder discards, or wants or needs to discard, batteries are considered waste. The recipient then determines the waste treatment that can be used, in accordance with laws, regulations and policies, including those contained in this CMP. Collected

Waste batteries can be sorted by chemical composition. The sorted batteries are sent to different recyclers. The batteries are processed as waste material that includes the recovery of metals. The different substreams can be used to produce new products. Once the recycling has been completed, an assessment of the end-of-waste status can be carried out on the basis of the conditions set out in Article 1.1(6) Environmental Management Act and [chapter on waste or non-waste], based on all the facts and circumstances of the case.

Non-waste on the market

In all cases, when batteries are placed on the market as non-waste (either directly or after recovery or not), they must comply with the applicable product legislation as a minimum. These include REACH, the POP Regulation and the requirements arising from the Commodities Act.

6.2Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to ‘potentially recoverable critical materials’.

According to the report ‘Recovery potential secondary critical raw materials based on waste plans in the LAP3’ (TNO, 2023), batteries contain the following potentially recoverable critical materials: magnesium, cobalt, lithium and antimony. For the purpose of recovery, the report considers the

11The Batteries Regulationintroduces the concept of preparing for re-use in addition to the concept of preparing for re-use. Preparing for repurposing is an operation that prepares an discarded battery or its components to be used for a purpose or application other than that for which it was originally designed. An example is a car battery which is repurpose as energy storage medium for runway lighting.

12The Batteries Regulationintroduces the concept of remanufacturing. This is a technical operation carried out on a used battery, including disassembly and assessment of all its battery cells and modules, and use of a certain number of new, used or recovered from waste battery cells and modules, or other battery components, to restore its battery capacity to at least 90 % of its original nominal battery capacity, and where the condition of each individual battery cell does not differ by more than 3 %, and which results in that battery being used for the same purpose or application as the one for which it was originally designed. An example is a bicycle battery that can be used again as a bicycle battery once it has been remanufactured.

waste to be promising. The study also looked at techniques to recover critical materials and where they are available within the EU. Waste processors can use this overview to make choices for developing techniques within the Netherlands or, for example, to cooperate with countries within the EU that have experience with the technique and/or are equipped with capacities to recover certain materials.

[Section 2.3.6 'Critical materials and high dignity'] of the CMP's 'Recycling of waste' chapter provides more information on critical materials in relation to waste treatment.

6.3Collection and Extended Producer Responsibility (EPR)

Producers have extended producer responsibility (EPR) to manage their batteries at the end of their life cycle. Producers finance, among other things, the costs of separate collection and its subsequent transfer and treatment, taking into account any revenue generated by the waste batteries. The EPR aims to promote the separate collection of waste batteries and to reduce the adverse effects of waste battery management.

The EPR applies to batteries that producers make available on the market for the first time on the territory of a Member State. In addition to manufacturers, producers can also be importers or distributors (e.g. retailers, garage owners). The RPV also applies when an economic operator places a battery on the market for the first time after preparing for re-use, preparing for re-destination, re-destination or re-manufacturing. See [Section 6.1] of this waste plan for an explanation of these terms.

The RPV is based on the Batteries Regulation. In Chapter VIII of the Batteries
The Regulation lays down requirements for the EPR. Producers must register as producers before placing batteries on the market and submit an approval to the Ministry of Infrastructure and Water Management on how to fulfil these obligations. Authorisation may be submitted individually or collectively.

Portable batteries and bicycle batteries are subject to a generally binding declaration (AVV). Producers and importers have the obligation to register with the producer organisation and to pay a waste management fee, which finances the collective collection and processing carried out by this organisation.

For batteries incorporated in appliances, light means of transport (such as electric bicycles and e-steps or other vehicles), EPR obligations are included in the EPR for electrical and electronic equipment. These batteries must be capable of being easily removed from the equipment by independent qualified professionals where they cannot be easily removed by the end-user (Article 17End-of-life Regulationelectrical and electronic equipment). The built-in batteries also fall within the scope of the Batteries Regulation, see also the [definition] of this waste plan.

For more information on issued AVVs and RPV, see the website of waste circular.

6.4BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

6.5References to sources

The following documents and reports are available on the CMP website and link to the contents of this waste plan:

- RoyalHaskoning DHV (2022). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

The [minimum standard] for all types of waste batteries complies with the requirements of the Batteries Regulation. Annex XII Part B and C of the Batteries Regulation set recycling efficiency and material recovery targets for achievement by a certain date. The minimum standard in the CMP is in line with the time-frame for achieving these objectives as set out in the Batteries Regulation. From August 2026, the European Commission assesses at least every five years – in the light of technical and scientific progress – whether the recycling efficiency and material recovery targets should be revised. If this is the case, the minimum standard in the CMP will be modified accordingly.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Waste plan mixed construction and demolition waste

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

Status: Circular Materials Plan draft for public consultation

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Website: circulaire materials plan.nl

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Waste plan mixed construction and demolition waste

This waste plan provides the assessment framework that competent authorities should take into account when granting permits for waste treatment and cross-border transport of mixed construction and demolition waste.

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of mixed construction and demolition waste. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Assessment frameworks

This section of the plan describes how companies should process mixed CDW and what concerns it. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an

environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

Mixed construction and demolition waste is released during construction and demolition activities by companies and private individuals.

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
Mixed construction and demolition waste	• Mixed construction and demolition waste arises at construction and demolition sites of construction works because not all waste is generated on the basis of Section 7.1.5. 'Separation of construction and demolition waste' from the Living Environment Buildings Decree (Bbl) must be kept separate by component. What is not kept separate is 'mixed construction and demolition waste'. • Mixed construction and demolition waste generated by construction and demolition of works other than construction works. • Similar commercial and private mixed renovation waste (i.e. residual household waste not produced separately from construction, demolition or conversion by private households) also falls under 'mixed construction and demolition waste'.
Mixed fractions of construction and demolition waste	• Fractions remaining after mixed construction and demolition waste or commercial and private mixed renovation waste of similar composition has not yet been fully processed according to the minimum standard. • Mixtures of components referred to in Art. 7.25 paragraph 4 or art. 7.26 Paragraph 4 of the BBL removed from the construction or demolition site *as a mixture* for post-separation.
Sorting residue from filtering out of mixed construction and demolition waste	• Residue left after mixed fractions of CDW have been sorted out according to the provisions of the minimum standard of this waste plan.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below cover the following aspects that are relevant when authorising the processing of mixed construction and demolition waste:

- mixing permission (2.1)
- minimum standard (2.2)

2.1Mixing of waste

Mixing is designated in the Environmental activities decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check whether mixing requires a permit.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
53A and 53B	ga or Nga	Construction and demolition waste contaminated with plaster or aerated concrete that is a hazardous waste material.	It is also a form of mixed construction and demolition waste. Category 53A is for mixtures that are considered hazardous waste based on contaminants (e.g. dioxin and PAH contamination due to fire damage).
56A and 56B	ga or Nga	Mixed construction and demolition waste, commercial waste and private mixed renovation waste similar to construction and demolition waste that are hazardous waste and not hazardous waste.	Mixed construction and demolition waste (Gbsa) is the residual fraction remaining after keeping (mandatory) separate from other waste at the construction or demolition site. Gbsa will only be covered sporadically by 56A (e.g. batches contaminated with PAHs or dioxins after fire damage, or batches where the source separation of hazardous waste at the construction or demolition site has not been carried out or has not been carried out sufficiently).
112A and 112B	ga or Nga	Other hazardous and non-hazardous waste that must not be disposed of in landfills in accordance with the Landfills and Dumping Bans Decreeon wasteor a minimum standard in the Circular Materials Plan.	Includes the sorting residue remaining after the mixed construction and demolition waste or the mixed fraction of construction and demolition waste has been fully processed in accordance with the minimum standard.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 ‘Keeping waste separate’].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

This plan includes the following specific provisions for mixed construction and demolition waste, which should be taken into account by the competent authority, in derogation from the general assessment frameworks:

Cat. Bal	Allowing mixing in relation to the waste categories
53B, 56B	By way of derogation from the [mixing of waste], the competent authority can only grant a permit to mix mixed construction and demolition waste within waste category 53B or waste category 56B if the [minimum standard] of sub-stream ‘a’ is met.
56A and 56B	By way of derogation from the ‘mixing of waste’ chapter, the competent authority cannot authorise the mixing of mixed construction and demolition waste of waste category 56A involving such waste of waste category 56B, as this would be contrary to the minimum standard of sub-stream ‘a’.
53A and 53B	By way of derogation from the ‘mixing of waste’ chapter, the competent authority cannot authorise the mixing of construction and demolition waste of waste category 53A contaminated with plaster or aerated concrete with such waste of waste category 53B, because this is contrary to the minimum standard of sub-stream ‘a’.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of mixed construction and demolition waste.

2.2 Minimum standard

The processing of mixed construction and demolition waste must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply for the processing of mixed construction and demolition waste:

Component flow	Waste	Minimum standard
a	Mixed construction and demolition waste, including: • construction and demolition waste contaminated with plaster or aerated concrete and • mixed fractions of construction and demolition waste.	Sorting or other processing with the aim of separating as much as possible mono-streams suitable for recycling, with the restriction that the residual residue must still be incinerated to a minimum. The minimal mono-flows that need to be separated (if any) are: • all components referred to in Articles 7.25 and 7.26 of the BBL, including waste designated as hazardous other than those referred to in Chapter 17 of the waste list from the European Waste List Regulation, and • stony materials, wood, plastic, metal and screened sand. The licence of sorting companies which separate only part of the fractions referred to above is subject to control rules. This ensures that the remaining mixed fraction is further sorted out in accordance with the provisions of this minimum standard.
b	Sorting residue from a. This concerns waste referred to in point (a)	Further process the provisions from [Waste plan residues].
	• for which the processing is no longer possible due to its nature and/or composition, or • for which the processing is so costly that the costs of delivery by the producer/disposer would exceed EUR 265/tonne.	
c	Unsorted fractions a	Processing in accordance with the relevant minimum standards in the waste or chain plans of the respective material. To the extent that these fractions are not covered by a minimum standard of a chain or waste plan, processing must be assessed against the [waste hierarchy] as described in section 'guidance tools'.

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 'Explanation of the minimum standard'].

Wastes containing certain SVHCs

SVHCs may be present in the waste. Both the legislation described and the assessment frameworks of [Chapter mengen van afvalstoffen] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether the transfer of mixed construction and demolition waste is allowed. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by ‘nEVOA’. In other cases, only the ‘WSR’ appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term ‘degree of recovery’ is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase ‘any landfilling or other disposal’. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [SVHCs and other substances of concern] in this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Relation with other waste plans

For the sub-streams in this waste plan where other waste plans are referred to for processing, no assessment framework for the transfer is included in this section. This is the case for sub-flows (b) and (c).

Scope of the assessment framework, grounds and conditions for objection

The assessment framework below applies to all sub-streams for mixed construction and demolition waste as specified in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. ‘prohibitions’] of the ‘cross-border transport’ section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection to ‘transfer for recovery’ (Article 12 EVOA).The second table indicates the grounds for objection to ‘transfer for disposal’ (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection

Preparing for reuse	Given the nature and/or composition of this waste, reuse is not a viable option.
(Interim recovery followed by) recycling	If the degree of recovery does not justify the shipment. This is the case when the amount of recycling used is lower than what is customary for the processing of mixed construction and demolition waste in the Netherlands. In addition, any landfilling or other disposal is too much (grounds for objection 12(1)(b) and (i) EVOA (Article 12(1)(g) EVOA)).
Other recovery	Higher quality processing in the form of recycling (for the bulk of materials present) is possible (objection ground Article 12(1)(a), (b) and/or (n) EVOA (Article 12(1)(a) and, for transfers to the Netherlands, Article 12(1)(k) EVOA)).

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
All forms of (preliminary) disposal except landfilling	This is because higher-quality processing in the form of recovery is possible (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
Landfill	This is because higher-quality processing in the form of recovery is possible; and • national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions
	(because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. Specific information is provided in [Section 6 'Waste or non-waste'].

4. Explanatory notes on the scope

Construction and demolition waste is waste generated during construction and demolition activities. Rules are in place for keeping certain fractions of construction and demolition waste separate at the site of work on construction works (§ 7.1.5). 'Separation of construction and demolition waste' from the Living Environment Law (Structures) Decree (Bbl)). Other construction and demolition works are subject to the rules in the Bal and the separation rules of [Chapter keep corporate and hazardous waste separate] from the CMP. What does not have to be kept separate, or may be post-separated under the conditions specified in the BBL, may be disposed of as 'mixed construction and demolition waste' and is the subject of this waste plan.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Separately collected mono-flows of construction and demolition waste and mono-flows that are generated after processing of construction and demolition waste and comparable commercial and household waste in composition.	The respective chain and waste plans. For waste without a chain or waste plan, processing according to the [waste hierarchy] as described in section 'guidance tools'.
Mixed plastic waste	[Plastics waste plan]
Mixed rubble (stony material)	[Stony waste plan]
Construction and demolition waste containing PCBs	[Waste plan PCB-containing waste]
Sorting residue remaining after sorting out mixed construction and demolition waste according to the minimum standard of this waste plan	[Waste plan residues]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 170903*; 170904; 191211*; 191212.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1 Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate.

[Section 2.1.2 'Mixing permission'] sets out the assessment framework for allowing mixing of mixed construction and demolition waste. In the case of 'mixing', this is described in [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep mixed construction and demolition waste separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	At construction and demolition sites of construction works, various types of waste are subject to a legal obligation to keep waste separate and to dispose of it separately, which is released during the actual performance of construction and demolition works on construction works *(Art.). 7.24, 7.25 and 7.26 Environmental Structures Decree)*. What is not covered by this obligation or, which is disposed of together for post-separation, is *mixed* construction and demolition waste.
Keeping industrial waste and hazardous waste separate *(general)*	Companies must keep mixed construction and demolition waste separate and dispose of other waste separately, unless they are licensed to mix *(Art.). 3.195 and art. 3.196 Bal and 'mixing of waste' chapter*. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to 'disposers' before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Businesses must always keep mixed construction and demolition waste separated by waste category and dispose of it separately *(Art.). 3.39 Bal in combination with* [keep company and hazardous waste separate]). Exceptions are limited. These are contained in the [Sections 4.3 and 4.4 'Exceptions'] of the 'Keeping corporate and hazardous waste separated' section of the CMP. A company that still wants to mix mixed construction and demolition waste that has to be separated with other waste needs a permit. The 'Mixing of waste' section of the CMP and [Section 2.1] of this plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep mixed construction and demolition waste delivered separately separated by waste category *(Art.) 1b. Waste Collection Decree)*. This applies both to mixed construction and demolition waste that is hazardous waste and to mixed construction and demolition waste that is not hazardous waste. No derogation is allowed.
Recycling centre *(bulky household waste)*	The Bal lists 18 wastes for which a waste collection site is responsible (must have or refer a facility itself). Mixed construction and demolition waste is not among the 18. If mixed CDW is nevertheless accepted by the recycling centre, a separate, specific storage facility must be provided unless the mixing permit is granted *(Explanatory notes to Bal, Article*). [Chapter on separate collection of household waste] specifically addresses separation at the collection point.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.2 'Mixing of hazardous waste']
- [Section 4.2.4 'Mixing of POP-containing waste'] and/or [Section 4.2.3 'Mixing of waste containing PBT or vPvB substances or substances of 'equivalent care']

- [Section 4.2.5 ‘mixing prior to or during landfilling’]
- [Section 4.2.6 ‘Mixing and building materials’]

In addition, the [chapter immobilisate, filler or aggregate] contains specific assessment frameworks for recycling into building materials.

Always check whether the mixing of mixed construction and demolition waste is subject to these sections in all assessment frameworks.

The essence of allowing the mixing of mixed construction and demolition waste is that processing in accordance with the minimum standard should remain possible after mixing. For mixed construction and demolition waste, this means that:

Cat. Bal	Allowing mixing operations
53B or 56B	• By way of derogation from the [Waste Mixing Chapter], the competent authority can only grant a permit to mix mixed construction and demolition waste within waste category 53B or within waste category 56B if the [minimum standard] of sub-stream ‘a’ is met. This implies at least that the residue remaining after processing must still be able to be incinerated to a minimum.
56A and 56B	• By way of derogation from the ‘mixing of waste’ chapter, the competent authority cannot authorise the mixing of mixed construction and demolition waste of waste category 56A with such waste of category 56B, because the minimum standard of sub-stream ‘a’ requires hazardous waste to be separated from the waste. If mixed construction and demolition waste is hazardous waste (waste category 56A), this will require a different way of processing depending on the contamination or components present. Therefore, for this waste, it needs to be assessed for each batch whether it can be mixed with other mixed construction and demolition waste that is hazardous waste. • In general, there is no policy objection to mixing batches of mixed construction and demolition waste (waste category 56B) before processing according to the minimum standard.
53A and 53B	• By way of derogation from ‘mixing of waste’, the competent authority cannot authorise the mixing of construction and demolition waste of waste category 53A contaminated with plaster or aerated concrete with such waste of category 53B, because the minimum standard of sub-stream ‘a’ requires hazardous waste to be separated from the waste. • If ‘construction and demolition waste contaminated with cellular concrete or plaster’ is hazardous waste, this will require different treatment depending on the contamination or components present. Therefore, for this waste, it has to be assessed for each batch whether it can be mixed with other ‘construction and demolition waste contaminated with aerated concrete or plaster’ that is hazardous waste.
53B	• There is no policy objection to mixing batches of ‘construction and demolition waste contaminated with plaster or aerated concrete that is not hazardous waste’.
53B and 56B	• The granting of permits to mix ‘construction and demolition waste contaminated with aerated concrete or plaster’ (waste category 53B) with mixed construction and demolition waste (waste category 56B) should be minimised, as keeping gypsum separate facilitates both the recycling of gypsum and the recycling of stony waste and other fractions of construction and demolition waste.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Given the nature of the waste, reuse is not an option.
Preparing forre-use	Due to the nature of the waste, preparing for reuse is not an option.
Recycling	Sorting of mixed construction and demolition waste is a preparatory operation for (final) recycling of the different mono-flows released from this process. Filtering out is the minimum standard. The processing of the sorted materials is then covered by other waste and chain plans.

Other usefulapplication	Not allowed for mixed construction and demolition waste.
Incineration as a formof disposal	Not allowed for mixed construction and demolition waste.
Landfill	Construction and demolition waste is subject to a dumping ban.

5.2.1 Preparing for reuse

When preparing for re-use, waste is made suitable for the same use for which it was originally intended by a simple cleaning and checking operation. This waste plan is a mixed waste, composed of different materials. Preparing for reuse is only a possible option for sorted components that are still intact and reusable.

5.2.2 Recycling

Sorting for recycling

Mixed construction and demolition waste, commercial waste similar to mixed construction and demolition waste, and private and mixed fractions (further gbsa) are of varying composition. The starting point for processing is that the gbsa is sorted or otherwise processed in order to separate as many mono-flows/fractions as possible that are suitable for recycling. The minimum standard refers to the minimum fractions that must be separated. The processing of the separated fractions is then covered by other waste plans.

Sorting residue

The minimum standard also defines the sorting residue. Sorting residue is the fraction remaining after the separation of all mentioned sub-fractions in such a way that it leaves a fraction which no longer contains materials suitable for recycling. What 'is no longer suitable for' is not to be described with criteria and is at the discretion of the Authority. In any case, a mixed fraction cannot be further sorted if it costs the disposer more than EUR 265 per tonne at the gate of the processor. The costs that may be included in the calculation of the amount of 265 are described in [Section 5.3.2 'What is included in the limit of EUR 265?'] of the 'Use of the cost criterion' section.

The condition is also that the sorting residue can still be incinerated. If there is a residue that is no longer accepted by WIPs, the sorting facility will have to change its process. Dumping of the residue would not be permitted and would also be contrary to the Landfills and Waste Dumping Prohibitions Decree (see below). This may mean that less mono-flows for recycling are sorted out than is technically possible in the strict sense.

The processing of the sorting residue is included in the [Residues waste plan].

Allowing the processing of mixed construction and demolition waste

The competent authority, when authorising the processing of gbsa, must identify the fractions and residues that arise and the manner in which they are processed. As this concerns the whole chain, it also involves the further processing of partial fractions and residues in another establishment. This means that control instructions may need to be linked to the licence. This provision has been included in the minimum standard to encourage the competent authority to check with an initiator wishing to process gbsa whether the fractions and residues formed do not have to be dumped. This prevents permitting processing initiatives further down the chain to fractions or residues for which dumping with a waiver is the only option.

5.2.3 Other recovery

Not allowed for mixed construction and demolition waste.

5.2.4 Incineration as a form of disposal

Not allowed for mixed construction and demolition waste.

5.2.5 Landfilling

Under the Landfills and Waste Dumping Prohibitions Decree(BSSA), Article 1(1), a dumping ban applies to CDW and residues from the processing of CDW (category 29), and to CDW and private mixed renovation waste (categories 15b and 16b) that is similar to CDW.
More information on the dumping bans can be found in [Preparing and implementing a dumping ban chapter].

5.3Substances of very high concern (SVHCs) and other substances of concern

The SVHC in the table below[13] is known to occur in mixed construction and demolition waste in concentrations above the concentration limit in [Table 1] in the chapter 'SVHCs and other substances of concern'. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be applied when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 'Legislation to phase out and restrict use'] of the chapter 'SVHCs and other substances of concern'.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the webpage 'Addressing substances of very high concern' (IPLO) and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

In the case of a mixed stream such as mixed construction and demolition waste, the presence of SVHCs above the concentration limit in [Table 1] in the chapter 'SVHCs and other

care substances', given the heterogeneity. Therefore, checking whether a quantity of several SVHCs above the concentration limit is not efficient.

However, attention should be paid to visible contaminants on known suspicious substances as shown in the table below. SVHCs may play a role in the processing of sorted fractions from mixed construction and demolition waste. However, these fractions are covered by other chain or waste plans.

This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

13Source: SGS Intron, 2019, SVHC in waste.

SVHC	Regulations	Waste and description
Asbestos fibres	REACH Annex XVII (restriction 6)	Demolition sites must carry out an asbestos inventory in accordance with current legislation and remediate in case of asbestos found. Mixed BSA will therefore no longer contain asbestos in theory. However, if asbestos contamination is nevertheless detected when checking incoming loads, the entire batch must be considered to be asbestos-containing waste and processed in accordance with the minimum standard set out in [waste plan for asbestos-containing waste]. This check should be part of the acceptance and processing policy of sorting companies.
Polycyclic aromatic hydrocarbons (PAHs)	REACH Annex XVII (restriction 50)	PAHs can occur in mixed construction and demolition waste in if the waste is visibly contaminated with suspicious roof waste containing tar or if a batch of mixed construction and demolition waste contains rubble or other material containing soot.

6. Other information

6.1Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term 'waste' should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

Always waste

The materials covered in this waste plan are always waste. However, once processed, the waste status of the material may be re-examined. For example, if the demand for waste or non-waste is asked after sorting out any mono-streams, it must be assessed on the corresponding chain or waste plan of that material.

6.2Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to 'potentially recoverable critical materials'.

Mixed construction and demolition waste is not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report 'Recovery potential secondary critical raw materials based on waste plans in the LAP3' (TNO, 2023).

[Section 2.3.6 'Critical materials and high dignity'] of the CMP's 'Recycling of waste' chapter provides more information on critical materials in relation to waste treatment.

6.3BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

6.4Mention of source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022). *Concretizing conditions that prevent recycling as aminimum standard.*
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.
- Iprnormag (2023). *[Fact-finding study on Recycle Tariff – A study on 32 waste streams: market forces, costs and revenues and impact on the CMP].*
- BRBS (2022). *Best available method of sorting construction- and demolition waste.*
- RHDHV (2020). *Exploring the prevention of incineration of recyclable materials in2030.*

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

The National Circular Economy Programme 2023-2030 announced a package of measures to close down specific material chains, including mixed construction and demolition waste. As an additional lock on the door, the options for introducing a ban on the incineration of recyclable waste are explored. One of the measures examined in this regard is to establish what is known as the ‘best available method’ for the treatment of mixed waste (RHDHV, 2020). The idea is that sorting companies operating according to this best available practice (BBW), the amount of recyclable waste in the residue continues to decrease. Sorting according to the BBW can be a condition for the incineration of sorting residue. The Ministry of Infrastructure and Water Management further explored this concept for mixed CDW (BRBS, 2022).

How to develop this concept has not yet been crystallised and will be explored further with the sector. Should this eventually lead to a policy change, the minimum standard in the CMP may be changed in line with this policy change.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Waste plan autoclaved aerated concrete

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

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Website: circulaire materials plan.nl

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Waste plan autoclaved aerated concrete

This waste plan provides the assessment framework that should be taken into account by the competent authority when granting waste treatment and cross-border transport permits for aerated concrete.

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of aerated concrete. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Future plans

Assessment frameworks

This section of the plan describes how businesses should process aerated concrete and its focus. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an

environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
• Source-segregated and delivered aerated concrete; • Aerated concrete separated in sorting process; • Aerated concrete as production waste.	Aerated concrete is released during building, renovation and demolition of buildings and constructions. In addition, aerated concrete is also released as production waste.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below address the following aspects relevant to authorising the processing of AAC:

- mixing permission (2.1)
- minimum standard (2.2)

2.1 Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Decision tree 'Mixing permit requirement'] is a tool to check whether mixing requires a permit.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories. The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
52	Nga	Aerated concrete	Aerated concrete that: • has been segregated at source and delivered separately (construction and demolition sites, recycling centre); • separated from sorting facilities; or • generated as production waste.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 'Keeping waste separate'].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks. This plan does not contain any specific provisions for aerated concrete that the Authority should take into account in derogation from the general assessment frameworks. [Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of aerated concrete.

2.2Minimum standard

The processing of autoclaved aerated concrete must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the processing of aerated concrete:

Waste	Minimum standard
Aerated concrete	Deposit at a suitable landfill.

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 'Explanation of the minimum standard'].

Wastes containing certain SVHCs

SVHCs may be present in the waste. Both the legislation described and the assessment frameworks of [Chapter mixing waste] and [SVHCs and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether transfer of AAC is permitted. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [SVHCs and other substances of concern] in this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Scope of the assessment framework, grounds and conditions for objection

The following assessment framework applies to all cellular concrete component streams as indicated in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
All forms of (provisional) application	If the degree of recovery does not justify the shipment. This is the case for aerated concrete if a not reasonable part of the transferred waste is landfilled or otherwise disposed of (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR).

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
Incineration	Due to the nature of the waste, not applicable.
Other forms of (preliminary) disposal other than incineration as a form of disposal or dumping	If the processing results in a fraction to be landfilled due to national self-sufficiency; and in the case of transfer to the Netherlands due to national legal provisions, if a part is landfilled (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (objection ground Article 11(1)(a) and (b) EVOA)).
Landfill	On the basis of national self-sufficiency, and in cases of transfer to the Netherlands on the basis of national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (objection ground Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. [Section 6.1 ‘Waste or non-waste’] provides specific information on this.

4. Explanatory notes on the scope

This plan refers to aerated concrete that is kept separate or separated. This aerated concrete comes mainly from construction and demolition works. It may also include production waste.

The cellular concrete material

Aerated concrete is a white, porous and light construction material. Aerated concrete is produced by mixing plaster, sand, cement and water and an extremely small amount of aluminium powder. By mixing in different proportions, products with different insulating and flame retardant properties are made. Reinforcement may be added. The use of fly ash as a raw material generates grey-coloured aerated concrete.

Aerated concrete is also known as cellular concrete. The main applications of aerated concrete are wall blocks, slabs and panels, floors and roofs. The construction or demolition can make aerated concrete bonded with wallpaper, tiles, stucco or other building materials.

Aerated concrete is often mentioned in breath with plaster blocks, but is a different material. Pollution of aerated concrete with plaster and vice versa complicates the recycling of both wastes. Plaster and aerated concrete are visually distinguishable from one another.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Mixed construction and demolition waste	[Waste plan mixed construction and demolition waste]
Mixed sorting fractions from the processing of construction and demolition waste, comparable commercial waste, comparable residual household waste in composition and waste from private individuals (unsorted) renovation waste	[Waste plan mixed construction and demolition waste]
Aerated concrete contaminated with roof waste containing tar or with other building materials	[Waste plan mixed construction and demolition waste]
Stony material	[Stony waste plan]
Gypsum, plaster blocks, plasterboard	[Gypsum waste plan]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 170802.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1 Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement] decision tree). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 ‘Mixing permission’] sets out the assessment framework for allowing the mixing of [waste]. In the case of ‘mixing’, this is described in [Section 4.1 ‘Definition of mixing’] of the ‘waste mixing’ chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep aerated concrete separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that ‘mixing’ is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	At construction and demolition sites of construction works, there is no legal requirement to keep aerated concrete separated and separated as a result of the actual performance of construction and demolition works *(Art. 7.24, 7.25 and 7.26 Environmental Structures Decree)*.
Keeping industrial waste and hazardous waste separate *(general)*	Businesses must keep aerated concrete separate and dispose of other waste separately, unless they have a mixing permit *(Art.). 3.195 and art. 3.196 Bal and ‘mixing of waste’ chapter*. [Waste mixing chapter] of the CMP and [Section 2.1 ‘Mixing permission’] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to ‘disposers’ before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Businesses must always keep aerated concrete released from production separate by waste category and separate discharges *(Art.). 3.39 Bal in combination with ‘Keeping corporate and hazardous waste separate’ chapter*. Exceptions are limited. These are contained in [section on keeping corporate and hazardous waste separate] from the CMP. A company that still wants to mix aerated concrete with other waste will need a permit. [Waste mixing chapter] of the CMP and [Section 2.1] of this waste plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep aerated concrete that is delivered separately for each waste category *(Article). 1b. Waste Collection Decree)*.
Recycling centre *(Bulky household) waste)*	The Bal lists 18 wastes for which a waste collection site is responsible (must have or refer a facility itself). Aerated concrete is not among those 18. If the recycling centre does accept aerated concrete, a separate, specific storage facility must be provided, unless the mixing permit is granted *(Explanatory notes to the Bal, Article)*. [Chapter on separate collection of household waste] specifically addresses separation at the collection point.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of ‘mixing’. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.2 ‘Mixing of hazardous waste’]
- [Section 4.2.4 ‘Mixing of POP-containing waste’] and/or [Section 4.2.3 ‘Mixing of waste containing PBT or vPvB substances or substances of ‘equivalent care’]
- [Section 4.2.5 ‘mixing prior to or during landfilling’]
- [Section 4.2.6 ‘Mixing and building materials’]

Always check whether the mixing of aerated concrete is covered by any review frameworks in the chapter.

The essence of allowing the mixing of aerated concrete is that processing in accordance with the minimum standard should remain possible after mixing. In the case of aerated concrete, this means that:

- The competent authority may grant a permit to mix aerated concrete with other waste or non-waste as long as the processing of this waste according to the minimum standards is still possible.

It is also preferable to keep aerated concrete as clean as possible throughout the chain. When disposers and businesses separate aerated concrete from plaster, stony waste and other waste, they promote both the recycling of cellular concrete and the recycling of gypsum and other fractions of construction and demolition waste.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Reuse does not imply waste treatment. [Section 6.1 'Waste or non-waste'] describes the possibilities for re-use if known.
Preparing forre-use	Preparation for reuse of aerated concrete may be possible in the case of production waste or construction materials released in good condition during demolition activities.
Recycling	If aerated concrete is sufficiently pure, recycling is always possible. For example, recycling into new cellular concrete or concrete blocks.
Other usefulapplication	Other recovery of autoclaved aerated concrete is permitted, as this is in accordance with the minimum standard.
Incineration as a formof disposal	Incineration is not a suitable processing operation because aerated concrete has no calorific value.
Landfill	Autoclaved aerated concrete is permitted.

5.2.1 Preparing for reuse

Preparing for re-use involves recovery by checking, cleaning or repairing, whereby products or components of products, which have become waste, are prepared for reuse without any further pre-treatment being necessary. Preparing for re-use of uncontaminated aerated concrete is possible. [Section 6.1 'Waste or non-waste'] describes the possibilities for re-use if known. After processing, this aerated concrete can be used as second-hand building materials. In addition, preparing second-hand building materials for re-use by traders of those materials does not require a permit (Article 3.190 Bal).

5.2.2 Recycling

Recycling cellular concrete is possible and also happens in practice. However, one condition for recycling is that the aerated concrete is not polluted or mixed with e.g. plaster, stony material or roofing felt.

The recycling of aerated concrete is carried out in the Netherlands by separating contaminants and reducing aerated concrete. Pure cellular concrete is partially used as a sand substitute in the production of new cellular concrete. Purity is required due to quality requirements and the white colour of the product and the technical constraints of the production process. In addition, cellular concrete is incorporated into sand-cement products, such as screeds or concrete works, as a sand fraction. To a lesser extent, for example in Germany, aerated concrete is also recycled by other means, for example to cat litter.

Recycling cellular concrete or concrete is not yet an interesting route in economic terms, as sand is a cheap raw material. The cost of separating and transporting aerated concrete is still too high in the current situation. Thus, for the time being, there are insufficient processing possibilities from an economic perspective to increase the minimum standard of aerated concrete from landfill to recycling.

5.2.3 Other recovery

The competent authority could authorise 'other recovery' as this is of higher quality than the minimum standard 'landfilling'. The aerated concrete should, however, be suitable to replace primary materials that should otherwise have been used for that function.

5.2.4 Incineration as a form of disposal

Incineration complies with the minimum standard but no suitable processing. In fact, aerated concrete is not combustible.

5.2.5 Landfilling

The competent authority may grant a permit for the deposition of autoclaved aerated concrete. Cellular concrete is not subject to a dumping ban. However, the high leaching of sulphate could have environmental concerns in aerated concrete landfills, which would require measures to be taken to limit the discharge of sulphate.

More information on the dumping bans can be found in [Preparing and implementing a dumping ban chapter].

5.3Substances of very high concern (SVHCs) and other substances of concern

The SVHCs in the table below are known[14] to be present in AAC in concentrations above the concentration limit value in [Table 1] of 'Chapter SVHCs and other substances of concern'. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 'Legislation to phase out and restrict use'] of the chapter 'SVHCs and other substances of concern'.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The starting point can be the following overview:

14 Source: SGS Intron, 2019, SVHC in waste.

to obtain an indication of which SVHC require attention but is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the 'Addressing Substances of Very High Concern' (IPLO) page and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

The table below provides a (non-exhaustive) list of SVHCs that may be present in AAC in excess of the concentration limit value in [Table 1] of 'Chapter SVHCs and other substances of concern'. This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

SVHC	Regulations	Waste and description
Polycyclic aromatic hydrocarbons (PAHs)	REACH Annex XVII (restriction 50)	Aerated concrete from roof slab construction and demolition waste may have adhered residues of tar-containing roofing felt that contain PAHs.

6. Other information

6.1 Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term 'waste' should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

For aerated concrete, here is a number of specific points for attention when assessing waste or non-waste. These points do not describe the full assessment framework.

By-product

The manufacture of autoclaved aerated concrete products will release residues. As long as this material complies with all the legislation on substances and products and technical regulations, the material can be re-used for the production of aerated concrete. The assessment of whether a material is a waste or a by-product will require a case-by-case assessment based on all the facts and circumstances of the particular case and on the conditions set out in Article 1.1(4) of the Environmental Management Act.

End-of-waste

Plates or blocks of aerated concrete released during demolition works are almost always waste. It is only if, at the time of authorisation for demolition by the holder, it is already known where the cellular concrete slabs or blocks will be used again and will not need to undergo any further processing that they may be waste. The end-of-life chain can be assessed as allowing the reuse of cellular concrete slabs or blocks. Ideally, this assessment should be done as early as possible, before scrapping. If it is clear that cellular concrete slabs or blocks can still be reused or recycled then more careful demolition will take place. If this step is not taken by the demolition waste collector, the construction and demolition waste collector may also carry out this assessment. After preparation for reuse or recycling has been completed, the conditions set out in Article 1.1(6) Environmental Management Act(WM) and [Chapter Waste or non-waste] allow an assessment of whether end-of-waste exists, based on all the facts and circumstances of the case.

Please note: The presence of contaminants on aerated concrete such as pur and sealant is an indication that it is a waste material. For marketing purposes, aerated concrete in general needs to be clean.

Non-waste on the market

In all cases, when aerated concrete is placed on the market as non-waste (either directly or after recovery or not), it must at least comply with the applicable product regulations. These include REACH, the POP Regulation and the requirements arising from the Commodities Act. The requirements of the Living Environment Law (Activities) Decreeand the SoilDecree on Soil Quality should also be considered for the use of aerated concrete as a building material.

6.2Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to 'potentially recoverable critical materials'.

Cellular concrete is not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report 'Recovery potential secondary critical raw materials based on waste plans in the LAP3' (TNO, 2023).

[Section 2.3.6 'Critical materials and high dignity'] of the CMP's 'Recycling of waste' chapter provides more information on critical materials in relation to waste treatment.

6.3BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

6.4Mention of source

For this part of the CMP, the following documents have been used:

- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

No developments are currently foreseen that could lead to changes in the assessment frameworks of this waste plan.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Roof waste plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

Status: Circular Materials Plan draft for public consultation

Sender: Ministry of Infrastructure and Water Management

Date: January 2025

Website: circulaire materials plan.nl

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Roof waste plan

This waste plan provides the assessment framework that competent authorities should take into account when granting waste treatment and cross-border transport permits for roofing waste.

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of roofing waste. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Assessment frameworks

This section of the plan describes how companies should handle roofing waste, and what the focus is on it. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
PAH-rich roofing waste	Roofing waste is PAH-rich if the concentration of PAH10 > 75 mg/kg of dry matter is present. • Roof waste containing tar is in principle always PAH-rich. • Bituminous roofing waste is PAH-rich only exceptionally.
Roof waste low-PAH	Roofing waste is PAH-poor if its concentration of PAH10 ≤ 75 mg/kg dry matter is determined by the PAH10 ≤ 75 mg/kg. • This includes the bulk of the bituminous roofing waste. • Waste cuttings from bituminous roofing material also fall under this category. • Roof waste containing tar is rarely a PAH-poor.
Composite roofing waste	Composite roofing waste is: • mixtures of tar-containing and bituminous roofing waste, for example because one of the two forms was applied to the other during roof maintenance; • bituminous roofing waste mixed with or adhered to ‘non-roofing’ material (such as concrete, wood, metal, insulation material, etc.); • roofing waste containing tar mixed with or adhered to non-roofing material (such as concrete, wood, metal, insulation material, etc.); • mixtures of tar-containing and bituminous roofing waste mixed with or adhered to ‘non-roofing’ material (such as concrete, wood, metal, insulation material, etc.).
Roof gravel, adhered to tar or bitumen.	Roof gravel adhered to tar or bitumen. Lots may be contaminated with PAH.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below address the following aspects that are relevant to permitting the processing of roofing waste:

- mixing permission (2.1)
- minimum standard (2.2)

2.1Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check if mixing is a licence is required. In addition, the [chapter immobilisate, filler or aggregate] describes when an authorisation is required for the production of construction materials from waste materials.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The minimum standard is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

N°	GA/NGA *	Bal waste category	Wastes covered
44A and 44B	NGA	Roofing waste containing more than 75 mg/kg of PAHs that is a hazardous waste material and does not fall within categories 46, 47, 48, 49, 91 and 92	PAH-rich roofing waste is relatively old roofing material, which is largely free from 'non-roofing' material, such as gravel, cement and wood.
45	Nga	Roofing waste containing not more than 75 mg/kg of PAHs that is not a hazardous waste material and does not fall within categories 46, 47, 48, 49, 91 and 92	This includes (the bulk of) PAH-poor roofing waste. Waste cuttings from bituminous roofing material also fall under this category. This roofing waste is relatively clean, i.e. not linked to PAH-rich roofing waste or to non-roofing material.
46A and 46B	ga or Nga	Composite roofing waste containing more than 75 mg/kg of PAHs and less than 10% non-roofing material that is a hazardous waste material	This includes mixtures of low-PAH and PAH-rich roofing with few other materials, and a relatively high proportion of PAHs-rich roofing waste.
47A and 47B	ga or Nga	Composite roofing waste containing more than 75 mg/kg of PAHs and more than 10% non-roofing material that is a hazardous waste material	This includes mixtures of low-PAH and PAH-rich roofing with more than 10% other materials and a relatively high proportion of PAH-rich roofing waste.
48	Nga	Composite roofing waste containing not more than 75 mg/kg of PAHs and less than 10% non-roofing material that is not a hazardous waste material	This includes mixtures of low-PAH and PAH-rich roofing with few other materials, and the proportion of PAHs-rich roofing waste is relatively small.
49	Nga	Composite roofing waste containing not more than 75 mg/kg of PAHs and more than 10% non-roofing material that is not a hazardous waste material	This includes mixtures of low-PAH and PAH-rich roofing containing more than 10% materials. The share of PAH-rich roofing waste is relatively small.
50A and 50B	ga or Nga	Adhesive roofing gravel that is a hazardous waste material or not a hazardous waste material	The material that the roof gravel is adhered to determines whether it is hazardous waste or not.
112A and 112B	ga or Nga	Other hazardous and non-hazardous waste that may not be dumped pursuant to the Landfills and Waste Dumping Prohibitions Decree [Besluit stortplaatsen en stortverboden afvalstoffen] or a minimum standard in the Circular Materials Plan [Circulair Materialenplan].	Sorting residue 'non-roofing material' separated from composite roofing waste.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 'Keeping waste separate'].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

For roofing waste, this plan does not contain any specific provisions that should be taken into account by the competent authority in derogation of the general assessment frameworks.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of roofing waste.

2.2Minimum standard

The processing of roofing waste must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply for the processing of roofing waste:

Component flow	Waste	Minimum standard
a	PAH-rich roofing waste	Process thermally in a manner that recycles the mineral fraction and destroys the PAHs. Hereby: • incineration requires energy content to be taken into account; • pyrolysis and gasification require recovery of the hydrocarbons produced. This minimum standard means that recycling into a building material by means of immobilisation without destruction of the PAHs present is expressly not permitted.
b	Roof waste low-PAH	Processing aimed at recycling the mineral fraction. In the case of thermal treatment, this has to be done using the energy content of the waste (in case of incineration) or the hydrocarbons formed (in case of pyrolysis or gasification).
c	Composite roofing waste containing *more* than 10% (v/v) ‘non-roofing’ material	Sorting or other processing with the aim of separating a fraction of non-roofing material by a maximum of 10% (v/v) ‘non-roofing’ material and then: • Further processing of the roofing waste fraction in accordance with minimum standard (a) for PAH-rich or (b) for PAH-poor roofing waste. • Further processing of the separated non-roofing material in accordance with minimum standard (f).
d	Composite roofing waste containing *up to* 10% (v/v)	Processing in accordance with minimum standard (a) for PAH-rich or (b) for PAH-poor roofing waste.
	non-roofing material	Likewise, sorting or other processing with the aim of separating a fraction of non-roofing material from the non-roofing material is permitted and then: • Further processing of the roofing waste fraction in accordance with minimum standard (a) for PAH-rich or (b) for PAH-poor roofing waste. • Further processing of the separated non-roofing material in accordance with minimum standard (f).
e	Roof gravel, adhered to tar or bitumen	Cleaning/separation aimed at: • the recycling of the gravel, taking into account the provisions of [Chapter SVHC and other substances of concern] (if applicable); and • burning as a form of removal of the tar and/or bitumen fraction. For PAH-rich roofing waste, only forms of processing that destroy the PAHs present are permitted. Recovery of the PAH-containing fraction, e.g. through immobilisation, is expressly prohibited. Roof gravel, adhered to tar or bitumen contaminated with other (non-stony) materials that make it non-recoverable may be landfilled.

f	Fraction separated from composite roofing waste 'non-roofing materials'	• In the case of mono-flows: processing according to the relevant minimum standards elsewhere in this CMP; in the case of a mono-flow not covered by a minimum standard in the CMP, the processing should be assessed against the [waste hierarchy] as described in section 'guidance tools'. • In the case of a sorting residue of 'non-roofing' material: incineration as a form of disposal. By way of derogation from the above, dumping can be allowed for a sorting residue of 'non-roofing material', containing too many unwanted components for waste incineration plants*. This is conditional on the demonstration that further sorting would not significantly reduce the volume to be dumped. This takes into account what can be considered as best available techniques and the associated costs.

* Unwanted components for incineration plants may be: PVC parts, insulation materials, components that are strongly bonded to high-calorific materials.

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 'Explanation of high-quality processing'].

Wastes containing certain SVHCs

The above minimum standard takes into account the presence of PAHs, which may also contain other SVHCs. Both the legislation described and the assessment frameworks of [waste mixing chapter] and [chapter on SVHCs and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether the shipment of roofing waste is permitted. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [SVHCs and other substances of concern] in this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Relation with other waste plans

For the sub-streams in this waste plan where other waste plans are referred to for processing, no assessment framework for the transfer is included in this section. This is the case for sub-stream f if it is a mono-stream.

Scope of the assessment framework, grounds and conditions for objection

The assessment framework below applies to all component streams for roofing waste as specified in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for reuse	Given the nature and/or composition of this waste, re-use is usually not a viable option. If preparation for reuse is possible, then shipment is not allowed if the extent of recovery does not justify the shipment. For
	roofing waste is considered to be excessive in landfilling because recovery (at least of the inert fraction) is possible (grounds for objection 12(1)(b) and 12(1)(g) EVOA)).
(Interim recovery followed by) recycling for component stream a	Unless: • the PAH present shall be destroyed in cases where the PAH10 concentration is equal to or greater than 75 mg/kg of dry matter; and • measures have been taken during processing in the country of destination to ensure that the PAH present cannot spread into the environment; and • the degree of recovery justifies the shipment. In this context, any landfilling is too high because recycling of at least the mineral fraction is possible. (grounds for objection 12(1)(b) and 12(1)(g) EVOA).
(Interim recovery followed by) recycling for component stream b	If the degree of recovery does not justify the shipment. In this context, any landfilling is too high because of the potential for recycling of at least the mineral fraction (grounds of objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR)).
(Interim recovery followed by) recycling for component streams c and d	If the degree of recovery does not justify the shipment. This is the case where an unreasonable amount of the shipped waste is landfilled or otherwise disposed of (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR)).

(Interim recovery followed by) recycling for component stream e	Unless: • cleaning/separation aimed at recycling the gravel and measures are in place in the country of destination to ensure that any contamination present cannot be spread to the environment; and • if the concentration of PAH10 is equal to or greater than 75 mg/kg of dry matter, the PAHs present are destroyed prior to or during processing; and • if the degree of recovery justifies the shipment (grounds for objection 12(1)(b) and 12(1)(g) EVOA).
Other recovery for component flows (a), (b), (c) and (d)	This is because higher-quality processing in the form of recycling is possible for at least the mineral fraction (objection ground Article 12(1)(a), (b) and/or (n) EVOA (Article 12(1)(a) and, for shipments to the Netherlands, Article 12(1)(k) EVOA)).
Other recovery for component stream e	This is because higher-quality processing in the form of recycling of the gravel fraction is possible in any case (objection ground Article 12(1)(a), (b) and/or (n) EVOA (Article 12(1)(a) and, for transfers to the Netherlands, Article 12(1)(k) EVOA)).
All forms of (preliminary) recovery for component stream f	If the degree of recovery does not justify the shipment. This is the case for waste from component streams e and f when a not reasonable part of the waste shipped is landfilled (grounds for objection 12(1)(b) and (i) nEVOA (Article 12(1)(g) EVOA)).

Disposal for which the shipment is *not* authorised	Specific provisions and grounds for objection
Other forms of (preliminary) disposal other than dumping	This is because higher-quality processing in the form of recycling can be carried out at least on the mineral fraction, unless: • the sorting residue is 'non-roofing' material; or • the roof gravel, adhered to tar or bitumen contaminated with other (non-stony) materials; and
	• the processing does not result in a fraction being landfilled. If the processing of the sorting residue results in a fraction to be landfilled, then transfer is not permitted under national self-sufficiency and, in the case of transfer to the Netherlands, under national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (objection ground Article 11(1)(a) and (b) EVOA)).
Landfill	Because of the higher quality processing possible, and/or • under national self-sufficiency, and • transfer to the Netherlands in accordance with national legal provisions (ground for objection because the conditions laid down in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. [Section 6.1 'Waste or non-waste'] provides specific information on this.

4. Explanatory notes on the scope

This plan covers different types of roofing waste. This waste plan includes only roofing waste that is bituminous, tar-containing or adhered to bitumen or tar (e.g. roof gravel or composites). Roofing such as EPDM (synthetic rubber) is not included in this plan.

Roofing waste is produced from the construction, renovation, repair or demolition of buildings and constructions. We distinguish various types of roofing waste, depending on the nature of the activity and the composition of the waste. When constructing roofs with roofing material, cuttings may remain. The current roofing material is PAH-poor. This means that residues from cuttings are low-PAHarth roofing waste. Sometimes roofing waste is mixed. For example, when different types of roofing are installed one over the other or when the roofing is adhered to non-roofing material.

PAH-rich or PAH-poor

Polycyclic aromatic hydrocarbons (PAHs) are always present in roof waste covered by this waste plan, some of which are carcinogenic (carcinogenic) or suspected to be carcinogenic[15]. The CMP focuses on removing these connections from the environment. The differences in PAH levels in roofing waste are large. Tar-based roofing material is rapidly PAH-rich in many thousands or tens of thousands of mg/kg. Tar-based roofing material has not been used for several decades, but is still released during demolition and renovation. Roofing material based on bitumen generally has PAH levels of several tens of mg/kg. This means that PAH-poor roofing waste also has some residual cuts from these waste materials during roof construction.

The CMP distinguishes between PAH-rich and PAH-poor roofing waste. The limit is 75 mg/kg PAK10[16].

The Soil Quality Regulation2022 sets out the maximum composition values for construction materials (in Annex A), for substances that are commonly present in construction materials and that may be harmful to soil quality. The maximum composition value for PAH10 is 75 mg/kg dry matter. This means that:

- Roofing waste is PAH-poor if the concentration of PAH10 is less than or equal to 75 mg/kg dry matter.
- Roofing waste is PAH-rich if the concentration of PAH10 exceeds 75 mg/kg of dry matter.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Mixed construction and demolition waste	[Waste plan mixed construction and demolition waste]
Concrete and masonry, stones, stone grit, roof slates, roofing tiles and roof grit not covered by tar or bitumen	[Stony waste plan]
Asphalt	[Asphalt waste plan]
EPDM roofing waste	[Waste plan tyres and rubber]

15For an overview, see the [RIVM]substance database.

16PAH10 is the sum of the concentration values of the following substances: naphthalene, phenanthrene, anthracene, fluoranthene, chrysene, benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, indeno(1,2,3cd) pyrene and benzo(ghi)perylene.

Roof waste containing asbestos *PAH-rich or low-PAH roofing waste (or mixtures thereof) mixed/bonded with asbestos cement in which, for the total mixture, the concentration of serpentine asbestos plus 10 times the concentration of amphibole asbestos exceeds 100 milligrams per kilogram of dry matter.*	[Waste plan asbestos-containing waste]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 170301*; 170302; 170303*; 170903*; 170904.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1 Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for permitting the mixing of roofing waste. In the case of 'mixing', this is described in [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep roof waste separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	At construction and demolition sites of construction works, different types of roofing waste are subject to a legal obligation of keeping them separate and disposing of them separately *(Art. 7.24, 7.25 and 7.26 Environmental Structures Decree)*.
Keeping industrial waste and hazardous waste separate *(general)*	For roofing waste, there are many different waste categories based on the composition of the waste. Companies must keep roof waste separate by category and dispose of it separately, unless they are licensed to mix *(Art.)*. *3.195 and art. 3.196 Bal and 'mixing of waste' chapter*. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.
Keeping separate during collection	Collectors must always keep roof waste that is disposed of separately separated by waste category *(Article). 1b. Waste Collection Decree)*. This applies both to roofing waste that is hazardous waste and to roofing waste that is not hazardous waste. No derogation is allowed.
Recycling centre	Roofing waste is one of the 18 wastes for which the waste collection point must have a storage facility or indicate to individuals where it is possible to access it if the waste collection point itself does not take up such waste *(Article). 4.623 Bal).*
(bulky household waste)	[Chapter on separate collection of household waste] specifically addresses separation at the collection point.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should be taken into account by the competent authority *always*.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.2 'Mixing of hazardous waste']

- [Section 4.2.4 ‘Mixing of POP-containing waste’] or [Section 4.2.3 ‘Mixing of waste containing PBT or vPvB substances or substances of ‘equivalent care’] • [Section 4.2.5 ‘Mixing prior to or during landfilling’]
- [Section 4.2.6 ‘Mixing and building materials’] and additionally [Section 3.2 ‘Use of waste as or in the production of building materials’] of Chapter ‘immobilisate, filler or additive’.

Always check whether any of the chapter’s assessment frameworks apply to the mixing of roofing waste.

The essence of allowing the mixing of roofing waste is that processing in accordance with the minimum standard should remain possible after mixing. For roofing waste, this means that:

- The competent authority may grant a permit to mix PAH-rich roofing waste (Waste Category 44A and 44B), and/or PAH-rich composite roofing waste with up to 10% (v/v) ‘non-roofing’ material (Waste Category 46A and 46B) for as long as the PAH-containing fraction is destroyed. Processing should also be aimed at recycling the mineral fraction by thermal processing of the waste, using the energy released (by incineration) or hydrocarbons obtained (by pyrolysis or gasification). It is allowed to separate the roofing material from the ‘non-roofing’ material first with a pre-treatment.
- The competent authority may grant a permit to mix non-hazardous PAH-poor roofing waste (waste category 45) or non-hazardous PAH-poor composite roofing waste with up to 10% (v/v) ‘non-roofing’ material (waste category 48) for as long as the mineral fraction is recycled and, in the case of thermal treatment, the energy content of the waste (in case of incineration) or of the hydrocarbons formed (in case of pyrolysis or gasification) is used.
- The competent authority may authorise the mixing of PAH-rich composite roofing waste with more than 10% (v/v) ‘non-roofing’ material within and between waste categories 47A and 47B for as long as this waste is sorted or otherwise processed with the aim of separating a fraction of non-roofing material with a maximum of 10% (v/v) ‘non-roofing’ material, after which the fractions are processed in accordance with the minimum standard.
- For mixing of non-hazardous low-PAH roofing waste by more than 10% (v/v) ‘non-roofing’ material in waste category 49 may be authorised by the competent authority as long as it is sorted or otherwise processed with the aim of separating a non-roofing material fraction by up to 10% (v/v) ‘non-roofing’ material, after which the processing of fractions is carried out in accordance with the minimum standard.
- The competent authority may grant a permit for mixing bonded roof gravel within and between waste categories 50A and 50B as long as the gravel is recycled and the PAHs-containing fraction is destroyed.
- The competent authority may authorise the mixing of sorting residue (i.e. not mono-streams) ‘non-roofing material’, separated from composite roofing waste, within and between waste categories 112A and 112B if it is incinerated.
- The competent authority cannot *authorise* mixing for the purpose of recovering the PAH-containing fraction, e.g. through immobilisation of the PAH.

The competent authority attaches control instructions to the permit for the mixing of roofing waste in order to ensure treatment in accordance with the minimum standard. The use of guidance in general is described in section 2.4.2 ‘the minimum standard consists of several steps’ of the [Guidance on the use of minimum standard].

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Due to the nature of the waste, reuse (as defined in the definition of ‘reuse’) is not an option.
Preparing forre-use	Due to the nature of the waste, preparation for reuse (as defined in the definition of ‘preparation for reuse’) is unlikely to be a viable option. In addition, preparation for reuse for PAH-rich roofing waste is not permitted according to the minimum standard. Where PAH-poor roofing material remains in the cover of roofs, this may involve preparation for reuse. This is subject to conditions as described in [Section 5.2.1 ‘Preparation for reuse’].
Recycling	The minimum standards require that when processing PAH-rich and PAHpoor roofing

	waste, the recycling of the mineral fraction must always be ensured. Processing without the (ultimate) recycling of the mineral fraction therefore does not comply with the minimum standard. For PAH-rich roofing waste, the PAH-containing fraction must be destroyed. For PAH-poor roofing waste, this is optional.
Other usefulapplication	This is the minimum standard for the PAH-containing fraction of roofing waste. The energy produced by combustion or the hydrocarbons obtained by pyrolysis or gasification should be used. For PAH-poor roofing waste, the fraction containing PAHs may also be recycled, but not for PAH-rich waste.
Incineration as a formof disposal	Incineration as a form of disposal is only allowed for a separated fraction of non-mono-stream material, which is a mix of different materials.
Landfill	Dumping is only permitted for separated non-roofing material that can be incinerated on the basis of the minimum standard but which, due to its composition, is not accepted by waste incineration plants. Roof gravel, adhered to tar or bitumen that cannot be recovered as a result of contamination with other (non-stony) materials may also be dumped subject to conditions.

5.2.1 Preparing for reuse

Preparing for reuse involves a simple operation, such as cleaning and checking, after which the roofing waste would be reused as roofing. This is not an option for roofing waste from the demolition or renovation of roofs. This may be an option for residual cuttings of roofing material that are left behind when covering roofs. Where possible due to technical or logistical constraints, this is permissible for trimmings.

5.2.2 Recycling, other recovery and incineration

The following sections discuss the minimum standards of the different types/compositions of roofing waste. This is followed by a number of general considerations on the recycling of the mineral fraction in particular.

5.2.2.1 The different minimum standards

As the minimum standard sets different requirements for different sub-fractions, the minimum standard is described for each waste type.

PAH-poor roofing waste (PAH10 ≤ 75 mg/kg dry matter)

The minimum standard requires the recycling of at least the mineral fraction. This means that the material can be recycled in its entirety, but it can also be chosen for thermal processing, where the bitumen is destroyed. In the event of combustion, the energy content must be used and in the event of pyrolysis or gasification, the resulting hydrocarbons must be used. The known forms of processing that meet the minimum standard are:

- Processing into asphalt as raw material (recycling of the mineral fraction and of the bitumen is carried out).
- Processing as a raw material in the production of new roof sheets (recycling of both the mineral fraction and the bitumen).
- thermal treatment in TAG or ground cleaning facilities (only the mineral fraction is recycled; the energy content of the bitumen is used)
- incineration in an incineration plant with R1 status (grating kiln) (only the mineral fraction is recycled; the energy content of the bitumen is used),[17]
- incineration in a cement kiln (only the mineral fraction is recycled; the energy content of the bitumen is used).

The quality and composition of roofing waste determines its possibilities. Recycling in asphalt and recycling into new roof runways is the most high quality mLCA[18] (IVAM, 2016). However, given the policy objective of non-toxic recycling, the minimum standard allows for processing methods that ‘extract the PAHs from the chain’. Indeed, PAH-poor roofing waste is not PAH-free. Therefore, the processing of low-PAH asphalt in TAG cleaning, AVIs and cement kilns facilities is also permitted. This means that the competent authority must issue a licence to do so.

17 In practice, this roofing waste is generally not taken by WIPs (it does not meet acceptance criteria).

18 mLCA stands for multi-cycle Life Cycle Analysis. An mLCA takes into account, among other things, material losses, energy use and avoided products. In the case of an mLCA, several life cycles are considered (where possible).
The [Guide to mLCA] of the CMP assessment framework provides more information on mLCAs.

PAH-rich roofing waste (PAH10 > 75 mg/kg dry matter)

PAH-rich roofing waste must be treated in such a way that the PAH-containing fraction (tar) is destroyed and the mineral fraction is recycled. The minimum standard permits all forms of thermal processing that destroy the PAH-containing fraction and utilise its energy content (by incineration) or process (by pyrolysis or gasification).

In principle, roofing waste can be treated thermally in the following ways:

- burn,
- pyrolysis,
- gasification.

When burning, the energy content of the PAH-containing fraction (tar) is released as heat. This energy should be used, for example, by supplying electricity to the grid or steam to a nearby industrial plant. This saves fossil fuel.

Pyrolysis and gasification degrade the PAHs and the other hydrocarbons that make up tar and bitumen into smaller molecules. Depending on the process, oil, gaseous hydrocarbons and carbon monoxide are produced. These should be used as a substitute for fossil carbon. The mineral fraction remaining after thermal processing consists of gravel, sand and fine-grained material. These fractions are separated and mainly used in concrete and asphalt production.

In current practice, the removal of PAHs is carried out by incineration. Any form of incineration is permitted, as long as it is ensured that the mineral fraction of the roofing waste is ultimately recycled and the energy content of the roofing waste is used. The following forms of processing are an option and comply with the minimum standard:

- incineration in a TAG cleaning plant, • incineration in an R1-status incineration plant (grating kiln),
- incineration in a cement kiln.

Not all of these techniques are equally suitable for large quantities of roofing waste (e.g. AVI). In addition, not all of these plants are allowed to process PAH-rich waste at all times. The processing options above provide ample capacity to process all PAH-rich roofing waste.

Composite roofing waste

The minimum standard distinguishes between composite roofing waste containing more or less than 10% non-roofing material. For composite roofing waste containing more than 10% non-roofing material, a separation step is first mandatory in order to allow the subsequent processing of the roofing waste. For lots with less than 10% non-roofing material, this separation step is not mandatory, but of course allowed.

Ultimately, for all composite roofing waste, the aim is to recycle the mineral fraction and utilise its energy content. Depending on the PAH10 concentration, the PAHs-containing fraction must be destroyed. Therefore, the minimum standard for processing the separated non-roofing material fraction refers to the minimum standards for processing PAH-poor or PAH-rich roofing waste. Below is an overview of how to process the separated non-roofing material.

Separated non-roofing material fraction

The processing of a sorting residue of non-roofing material separated from composite roofing waste depends on its composition.

If the sorting residue is a mono-stream (the fraction consists of one material type or one type of product), the fraction must be processed in accordance with the minimum standard for the material in question. If there is no minimum standard, the competent authority will assess the processing against the [waste hierarchy] as described in section ‘guidance tools’.

If the sorting residue non-roofing material is not a mono-stream but a mixed stream, this residue fraction may be disposed of by incineration. However, mixed streams also often contain components that are not suitable for incineration in an incineration plant (e.g. PVC, insulation material or high-calorific material). Tar and bitumen are also undesirable when incinerating in an incineration plant. These wastes will therefore not be accepted by incineration plants unless they are present in very limited quantities. Therefore, it is preferable to distinguish between a fraction that meets the acceptance criteria of an incineration plant and a fraction that can only be landfilled during the separation of the non-roofing material.

By way of derogation from the above, dumping may be allowed for a mixed flow of 'non-roofing material' that contains too many components unwanted by WIPs. One condition is that it has been demonstrated that (taking into account the best available techniques and associated costs) it is not realistic for further sorting to significantly reduce the volume to be dumped. In order to be able to dump this material, an exemption from the dumping ban is necessary.

Roof gravel, adhered to tar or bitumen

The minimum standard for roof gravel adhered to tar or bitumen is the cleaning and recycling of the roof gravel and the incineration of the residues. This will prevent the spread of contaminants and reduce the use of primary raw materials.

Roof gravel, adhered to tar or bitumen can be cleaned by the Tar Containing Reclaimed Asphalt (TAG) recycling route. The gravel is then made available for recycling by removing bitumen and/or tar and screening a coarse fraction. This mineral fraction is often sold by the concrete industry.

Roof gravel, adhered to tar or bitumen contaminated with other materials often has a negative impact on produced building materials (mineral aggregate or cement) and is therefore not accepted for that application by recyclers. The material should be delivered clean, cleaned from non-stony materials. Roof gravel, adhered to tar or bitumen contaminated with other (non-stony) materials cannot be recovered and can only be landfilled. In order to be able to dump this material, an exemption from the dumping ban is necessary.

5.2.2.2 Focal points for recycling mineral fraction

Production of a building material

The Living Environment Law (Activities) Decree (§3.2.25 Bal) and the Soil Quality Decree set out the legal requirements for (the application of) building materials. These requirements therefore also apply to construction materials consisting, or produced from waste. In addition, the Soil Quality Decree imposes restrictions on the mixing of waste with other waste or with non-waste. In addition, the [Mixing of waste chapter] of the CMP introduces important restrictions on the processing of waste for building use. Permitting the processing of waste into building materials will require compliance with all of these conditions.

Immobilisation

The minimum standard specifies that recovery of PAH-rich roofing waste and gravel adhered to tar or bitumen is not permitted, even in combination with immobilisation. The PAHs must always be destroyed first.

Putting in place the necessary facilities at landfills

The minimum standard allows the recycling of roof gravel adhered to tar or bitumen in landfills. The use of roof gravel adhered to tar or bitumen as a building material in a landfill can only be considered as recycling if:

- the waste is used for the construction of necessary facilities at the landfill; and
- the waste is substituted for other materials or components that should have been used for that function; and
- the provisions in question cannot be implemented by landfill material offered for disposal, for example because they are not offered.

In all other cases, landfilling is involved.

In addition, for allowing the use as a building material in landfills, the following applies:

- be material that meets the quality requirements set out in the Soil Quality Decree (see paragraph 1).
  4.123 of the Bal; and
- [Section 3.3.2 'Recovery at landfills'] of the 'Landfilling in a circular economy' and Section 1.8.4.1 are complied with. 'use in a landfill' of the [Guide to classification of processing operations].

Filling and recovery in the deep substratum

For PAH-rich and PAH-poor roofing waste, the minimum standard is aimed at recycling at least the mineral fraction. Therefore, it is *not* permissible to use roofing waste for deep backfilling and recovery (e.g. salt caverns), or to use it to produce mortars for this purpose. It is also forbidden to export this, as recycling is possible. For further details, please see the various paragraphs of the CMP under [section ‘Landfilling in a circular economy’].

5.2.3 Landfilling

Under the minimum standard and the Landfills and Waste Dumping Prohibitions Decree(Bssa), Article 1(1), Category 36, a dumping ban applies to roofing waste.

More information on the dumping bans can be found in [Preparing and implementing a dumping ban chapter].

Exemption from the dumping ban

‘Non-roofing’ material separated from roofing waste sometimes contains too many components that are unsuitable for incineration (e.g. PVC parts, insulation material or high-calorific material). In this case, this residue fraction may be disposed of in a landfill. However, this should be exempted from the dumping ban.

In addition, roof gravel, adhered to tar or bitumen may not be recovered as a result of contamination with other (non-stony) materials (RoyalHaskoning DHV, 2022). Under certain conditions, this material may be deposited. This will also require an exemption from the dumping ban.

For more information, see the [Guidance on dumping ban exemption].

5.3Substances of very high concern (SVHCs) and other substances of concern

SVHCs in the table below are known[19] to be present in roofing waste in concentrations above the concentration limit value in [Table 1] of the ‘SVHCs and other substances of concern’ chapter. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 ‘Legislation to phase out and restrict use’] of the chapter ‘SVHCs and other substances of concern’.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the ‘Addressing Substances of Very High Concern’ (IPLO) page and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

19Source: SGS Intron, 2019, SVHC in waste.

The table below provides a (non-exhaustive) list of SVHCs that may be present in roofing waste above the concentration limit value in [Table 1] of the chapter ‘SVHCs and other substances of concern’. This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

SVHC	Regulations	Waste and description
Polycyclic aromatic hydrocarbons (PAHs)	REACH Annex XVII (restriction 50)	PAHs can be present in PAHs-rich roofing and roof gravel adhered to tar or bitumen. The minimum standard in the CMP already takes into account the presence of PAHs in roofing waste.
Hexabromocyclododecane (HBCDD)	POPs Regulation	HBCDD is a flame retardant used, inter alia, in expanded polystyrene foam insulation material (EPS). HBCDD may occur in composite roofing waste that has been mixed or associated with a substantial amount of EPS insulation material.

6. Other information

6.1 Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term ‘waste’ should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

For roofing waste and roofing material, here is a number of specific points for attention in the assessment of waste or non-waste. These points do not describe the full assessment framework.

Always waste sub-stream

The maximum composition values of construction materials in the Regulationsoil quality 2022and the minimum standard always require destruction of the PAH-containing fraction in PAH-rich roofing waste. For this reason, PAH-rich roofing waste is always considered to be waste if the material is transferred to another person, regardless of the behaviour and intentions of the holder.

By-product

When laying roofing from bitumen, residual material is released in the form of trimmings. As long as this material complies with all substance and product legislation and technical requirements, the material can be re-used for the production of new roof courses. The assessment of whether a waste or by-product is present will require a case-by-case assessment based on all the facts and circumstances of that case (the trimmings are collected separately and returned to the producer under fixed arrangements) and on the conditions set out in Article 1.1(4) of the Environmental Management Act.

Non-waste on the market

In all cases, where residues from bitumen roofing are placed on the market as non-waste (direct or otherwise after recovery), they must comply with the relevant product legislation as a minimum. This includes, for example, REACH and the POP Regulation.

6.2 Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to ‘potentially recoverable critical materials’.

Roofing waste is not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report ‘Recovery potential secondary critical raw materials based on waste plans in the LAP3’ (TNO, 2023).

[Section 2.3.6 ‘Critical materials and high dignity’] of the CMP’s ‘Recycling of waste’ chapter provides more information on critical materials in relation to waste treatment.

6.3BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

6.4Mention of source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- IVAM (2016). [Life cycle analysis of treatment options for bituminous roofing waste].

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

In the EU context, the Netherlands has embraced the policy objective of achieving 'non-toxic recycling' and a 'non-toxic circular economy'. For PAH-containing materials such as roofing waste, this means recycling of the mineral fraction with destruction of the PAH-containing fraction. For PAH-rich roofing waste, this is mandatory. This reduces the amount of PAHs in the material chain of roofing. For PAH-poor roofing waste, destruction of PAHs is optional due to the lower concentration of PAH10 and the fact that many new bituminous roofing materials are still being made. Destruction of the bitumen in roofing waste requires additional 'primary' bitumen from petroleum refining.

For PAH-poor roofing waste, an mLCA (IVAM, 2016) was carried out to calculate and compare the environmental impact of different processing methods. This pass-through shows that forms of processing where bitumen are also recycled (e.g. when processing in asphalt and processing into new roof sheets) have a much lower environmental impact than forms of processing where only the mineral fraction is recycled and the bitumen is incinerated (such as when processing in ground cleaning plants).

Bitumen-based secondary roofing material can be recycled in the production of asphalt or roofing. When it is certain that there is sufficient marketing of secondary bituminous roofing material, the minimum standard for low-PAH roofing waste could be adapted, so that only material as a whole (not just the mineral fraction) can still be recycled. The competent authority can then no longer grant a licence for forms of processing that lead to the incineration of the bitumen. Processing by means of TAG or ground cleaning facilities, where only the mineral fraction is recycled, is still permitted only for PAH-rich roofing waste. This also means that acceptance conditions and input checks at these companies will have to be adapted to prevent the processing of low-PAH roofing waste.

Discussions on the use of secondary bitumen in asphalt are ongoing. The issue at hand is also how requiring the recycling of a PAH-containing material relates to the objective of achieving a non-toxic circular economy.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Waste plan for electrical and electronic equipment

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading 'Assessment frameworks'.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a 'content' or 'bookmarks' in the browser or the PDF reader's left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the Tools section.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can't read the text or images? Contact 088-7977102 or the helpdesk's contact form.

Status: Circular Materials Plan draft for public consultation

Sender: Ministry of Infrastructure and Water Management

Date: January 2025

Website: circulaire materials plan.nl

Waste plan for electrical and electronic equipment

This waste plan provides the assessment framework that competent authorities should take into account when granting waste treatment and cross-border transport permits for waste electrical and electronic equipment (WEEE).

Synopsis

The first part of this plan contains the assessment frameworks for authorising the treatment and cross-border transport of WEEE. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Assessment frameworks

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2. Process quality assessment framework
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Future plans

Assessment frameworks

This section of the plan describes how companies manage waste electrical and electronic equipment (hereinafter: WEEE) must be treated and the issues to be addressed. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
Waste electrical and electronic equipment (WEEE)	This concerns electrical and electronic equipment that has reached the waste stage and is covered by the Order on waste electrical andelectronic equipment(WEEE Order). In fact, all devices that are plug-in or battery-operated are concerned. Discharge lamps are also covered by the WEEE Regulation.
Components and fractions produced during the treatment of WEEE.	These are hazardous substances, mixtures and components of electrical and electronic equipment that are separated from a stream, either by manual, mechanical, chemical or metallurgical treatment, in an identifiable stream or as an identifiable[20] part of a stream during the processing process.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below address the following aspects that are relevant to permitting the treatment of WEEE:

- Mixing permission (2.1)
- Minimum standard (2.2)

2.1Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check whether mixing requires a permit.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories. The table below clarifies which wastes fall under which waste category.

20Substances, mixtures or components are identifiable if they can be monitored to verify that they are treated in a way that is safe for the environment (WEEE Regulation, Article 1(d)).

N°	GA/NGA*	Bal waste category	Wastes covered
79A and 79B	na and Nga	Waste electrical and electronic equipment subject to the Waste Electrical and Electronic Equipment Regulation, which is a hazardous waste material and does not fall within another category.	These are all plug-in or battery-operated devices. Lamps include the light sources themselves (such as the light bulb or spotting), but also the housing of the light sources containing the light fittings.
80A and 80B	GA	Components and fractions produced in the treatment of waste electrical and electronic equipment, provided that: • it is not glass from cathode ray tubes or residues from such glass; • hazardous waste (or non-hazardous waste); and • they do not fall under any other category.	Components removed from waste electrical and electronic equipment.
84	GA	Discharge lamps.	Low pressure gas discharge lamps such as neon lamps, energy efficient lamps and fluorescent lamps. High-pressure discharge lamps are mostly for professional applications. For example, for the illumination of shop windows, streets, sports grounds and beamers.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 'Keeping waste separate'].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing] and its assessment frameworks. Storing electrical and electronic equipment together is not considered mixing.

For WEEE, this plan includes the following specific provisions, which, in derogation from the general assessment frameworks, must be taken into account by the competent authority:

Cat. Bal	Allowing mixing in relation to the waste categories
80A and/or 80B	By way of derogation from the [Waste Mixing Chapter], for the mixing of parts and fractions of WEEE within waste category 80A or 80B or between these waste categories, the competent authority may only grant a permit if the waste is treated to the minimum standards required for the treatment of this waste. If no waste plan from the CMP applies, it should be noted that the waste to be mixed is processed in the same, high-quality manner.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of WEEE.

2.2Minimum standard

The treatment of WEEE must be carried out in accordance with the minimum standard(s) set out below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the treatment of WEEE:

Component flow	Waste	Minimum standard

a	Waste electrical and electronic equipment (including discharge lamps)	Treatment of waste electrical and electronic equipment in a manner that at least complies with Article 11 of the WEEE Regulation.
b	Other parts and fractions produced by the treatment of waste electrical and electronic equipment	• Process the components and fractions in accordance with the relevant minimum standards specified in applicable waste plans. • To the extent that parts and fractions are not covered by a waste plan of the CMP, processing should be assessed against the [waste hierarchy] of the 'guidance tools' chapter.

Steering rule

A company licence for shredding discarded electrical and electronic equipment is subject to a guidance requirement. This WSR requires these companies to submit the resulting shredder waste to a processor who processes the waste according to the review frameworks of the [Shredder waste Waste Plan]. This WSR rule should only be missing if the shredder waste itself also processes the other shredder waste according to the review frameworks of the Shredder Waste Waste Plan.

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 'Explanation of the minimum standard'].

Wastes containing certain SVHCs

SVHCs may be present in the waste. Both the legislation described and the assessment frameworks of [Chapter mengen van afvalstoffen] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether the shipment of WEEE is allowed. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [Section 5.3 'SVHCs and other substances of concern'] of this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Relation with other waste plans

For the sub-streams in this waste plan where other waste plans are referred to for processing, no assessment framework for the transfer is included in this section. This is the case for sub-stream b.

Scope of the assessment framework, grounds and conditions for objection

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for reuse and (preliminary recovery followed by) recycling	• If shipments to and from the Netherlands do not comply with the requirements of Article 11 of the WEEE Directive. If transferred to the Netherlands, the treatment must also comply with the provisions of the Order on waste electrical andelectronic equipment; and/or • If the degree of recovery does not justify the shipment. This is the case for WEEE where the minimum recovery targets set out in Annex V of the 'WEEE Directive' are not met. In the case of transfer to the Netherlands, the treatment operation must also comply with the provisions of the 'Waste Electrical and Electronic Equipment Regulation' (Regeling afgedankte elektrische en elektronische apparatuur).
	(grounds for objection 12(1)(b) and 12(1)(g) EVOA).
Other recovery	This is because higher-quality forms of recycling can be achieved for at least part of WEEE (objection ground Article 12(1)(a), (b) and/or (n) EVOA (Article 12(1)(a) and, for shipments to the Netherlands, Article 12(1)(k) EVOA)).

Deletion for which the Transfer *not* available EBTP (Single Point of Entry)	Specific provisions and grounds for objection
All forms of (Remove (ig) prelop except stor) ten	This is because higher-quality treatment in the form of recovery is possible and required under the WEEE Directiveand, when transferred to the Netherlands, also under the Waste Management Regulationelectrical and electronic equipment(because the conditions of Article 11(1)(a) to (h) and/ or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).

Landfill	This is because higher-quality processing in the form of recovery is possible; and • national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. [Section 7.1 'Waste or non-waste'] provides specific information on this.

4. Explanatory notes on the scope

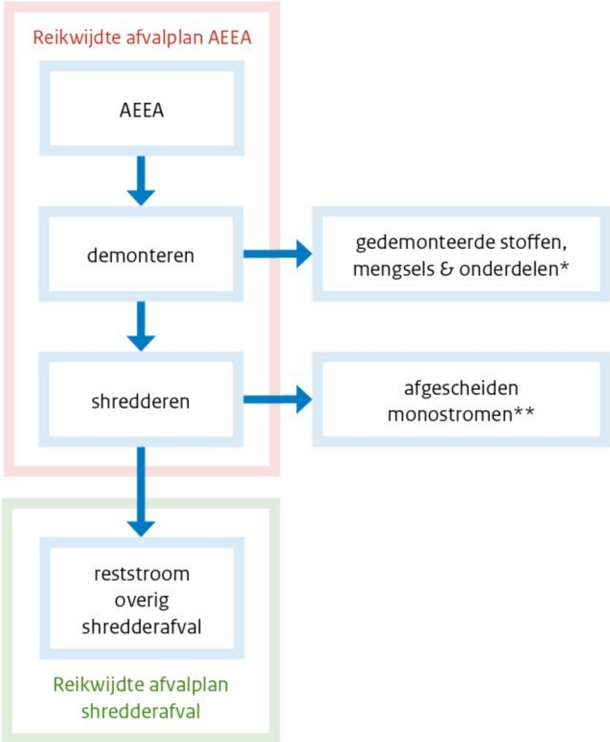
This waste plan includes all WEEE subject to the Waste Electrical andElectronic Equipment Regulation. The scheme uses the following definition for WEEE: *'Electrical or electronic equipment that is waste within the meaning of Article 3(1) of the Waste Framework Directive, including all components, sub-assemblies and consumables which are part of the equipment at the time of discarding'.*

The Waste Electrical and Electronic Equipment Regulation (WEEE) is based on the Directive2012/19/EU(hereinafter the WEEE Directive). The Directive has been accompanied by a FAQexplaining the Directive. This includes explanations of the responsibilities of processors, retailers and Dutch and foreign producers and manufacturers.

The regulations on waste electrical and electronic equipment apply to both the collection and the treatment/application of the equipment. WEEE refers not only to consumer appliances such as washing machines, refrigerators and vacuum cleaners, but also to professionally used equipment such as medical devices. Articles 2(2) and 2(3) of the WEEE Regulation refer to equipment that is not covered by the Regulation. Equipment outside the regime is also outside the scope of this waste plan. The Assistance with ScopeEnd of Life Electrical and Electronic Equipment Regulationcan also be used. This includes items such as equipment, but components not covered by the WEEE Regulation. The notion of Device or componentis sometimes difficult to determine if a component or device exists. Please note that where equipment is covered by the WEEE Regulation, it must be treated in its entirety in accordance with the treatment requirements of the WEEE Regulation, irrespective of the amount of electrical/electronic components it contains (Iprnormag, 2023).

After dismantling, some of the waste electrical and electronic equipment is shredding in accordance with the requirements of theWEEE Regulation. This shredding consists of the separation of metals (sometimes including other fractions) and the transfer of a residual stream of 'shredder waste'. The residual stream that remains must be processed in accordance with the minimum standard set out in the [Shredder waste waste plan]. The figure below shows how the scope of the WEEE waste plan relates to other waste plans.

Figure 1 - Sketch link between this plan and shredder waste plan



*Minimaal demonteren van de stoffen, mengsels en onderdelen uit Bijlage VII van de AEEA Richtlijn. Gedemonteerde materialen verwerken volgens de minimumstandaard van relevante afval- of ketenplannen. Van materialen die hier niet onder vallen, moet de verwerking getoetst worden aan de afvalhiërarchie in het CMP.

** Verwerken volgens de minimumstandaard van relevante afval- of ketenplannen. Indien de materialen niet onder een afval- of ketenplan vallen, moet de verwerking worden getoetst aan de afvalhiërarchie in het CMP.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
The residue from the shredder waste generated by the shredding of WEEE	[Shredder waste waste plan]
Solar panels	[Solar panel chain plan]
Batteries, accumulators	[Waste plan batteries]
Ferrous and non-ferrous metals	[Metal waste plan]
End-of-life vehicles and two-wheeled motor vehicles	[Waste plan for end-of-life vehicles]
Fluorescent powder (collected separately or not): from the treatment of fluorescent lamps and energy-saving lamps and as waste from the production of these lamps.	Fluorescent powder that is produced is covered by the [Waste plan for process-dependent industrial waste]. Fluorescent powder with mercury separated when processing lamps, which is < 0.1 mg/kg dm, must be processed according to the [waste hierarchy] in the 'control instruments' section. Mercury-free fluorescent powder with a mercury content of ≥ 0.1 mg/kg ds, separated from lamps, is covered by the [Mercury-containing waste plan]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 080317*; 080318*; 090111*; 090112; 160211*; 160212*; 160213*; 160214; 160215*; 160216; 200121*; 200123*; 200135*; 200136.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for allowing the mixing of WEEE. In the case of 'mixing', this is described in [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep WEEE separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	In the construction and demolition sites of construction works, there is a legal obligation to keep gas discharge lamps separate and discharged when actually carrying out construction or demolition works *(Art. 10).* *7.24, 7.25 and 7.26 Environmental Structures Decree)*.
Keeping industrial waste and hazardous waste separate *(general)*	Companies must keep WEEE, components from WEEE and gas discharge lamps separate and separate from other waste (including from each other), unless they are licensed to mix *(Art.). 3.195 and art. 3.196 Bal and 'mixing of waste' chapter*. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to 'disposers' before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Businesses must always keep WEEE and gas discharge lamps separate and separate from each other and from other waste *(Art.). 3.39 Bal with the 'Keeping business and hazardous waste separate' chapter*. These are contained in the [Sections 4.3 and 4.4 'Exceptions'] of the 'Keeping corporate and hazardous waste separated' section of the CMP. A company that wants to mix WEEE or gas discharge lamps with other waste needs a permit. [Mixing of waste chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan contains the assessment framework for mixing permission. The exception is the mixing of WEEE that is not hazardous with WEEE that is hazardous (79A with 79B). This is allowed on the basis of general rules, as this is considered a single waste category (*Explanatory notes to Article 3.39 Bal*). The [Waste Guide for Businesses] is a tool to check which waste types a specific company must keep separate.
Keeping separate during collection	Collectors must always keep waste that is delivered separately separated by waste category *(Art.) 1b. Waste Collection Decree)*. This
	applies both to WEEE or components of WEEE that are hazardous waste and to WEEE or components of WEEE that are not hazardous waste. No derogation is allowed.

Recycling centre *(Bulky household) waste)*	The Bal lists 18 wastes for which a waste collection site is responsible (must have or refer a facility itself). • WEEE is one of the 18 wastes for which the waste collection point must have a storage facility or indicate to private individuals where it is not collected by the waste collection point itself *(Article*). *4.623 Bal).* • Gas discharge lamps are not included in those 18 wastes. If the waste collection point nevertheless adopts gas discharge lamps, there must be a separate specific storage facility for these, unless the mixing permit has been granted (*Explanatory notes to the Bal, Article*). [Chapter on separate collection of household waste] specifically addresses separation at the collection point.
Municipal collection *(household waste)*	Municipalities are required to collect WEEE generated by households separately. No exceptions are possible. [Chapter on separate collection of household waste] details the obligations of municipalities.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.2 'Mixing of hazardous waste'];
- [Section 4.2.4 'Mixing of POP-containing waste'] and/or [Section 4.2.3 'Mixing of waste containing PBT or vPvB substances or substances of 'equivalent care'].

Check all review frameworks in the chapter to see if they are applicable to WEEE mixing.

The essence of allowing the mixing of WEEE is that it must be possible to continue processing in accordance with the minimum standard after mixing. For WEEE, this means that:

- The components and fractions of WEEE must be treated in accordance with the relevant minimum standards specified in the applicable waste plans. This means that the competent authority will mix parts and fractions of WEEE.
  (waste category 80A and 80B) can only be approved with other wastes if it is established that processing will be carried out in accordance with the applicable minimum standards. If no waste plan from the CMP applies, it should be noted that the waste to be mixed is processed in the same, high-quality manner.
- The competent authority cannot authorise the mixing of gas discharge lamps (84) with other waste or non-waste.

The assessment framework [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter also provides the following:

- Placing different types of WEEE together in a storage facility is not considered mixing. This includes, for example, a container for WEEE at the collection point, a drop-off facility for WEEE at a shopping centre, or the storage of returned WEEE at a collector. As long as the devices are placed in a joint storage and the devices remain manageable whole or as loose objects, there is no mixing. A collector then distributes this WEEE to specific treatment operators by WEEE type.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Reuse does not imply waste treatment. [Section 7.1 'Waste or non-waste'] describes the possibilities for re-use if known.
Preparing forre-use	Allowed if there are no (legal) obstacles to (preparing for) re-use.
Recycling and other recovery	WEEE must be treated in accordance with the CENELEC standards and the provisions of the WEEE Order. There are targets and specific requirements for

	preparation for reuse, recycling and recovery in general. Processors must be certified.
Incineration as a formof disposal	For WEEE, integral incineration is not allowed as recycling is possible. Whether incineration is permitted for separated components or materials for WEEE is determined by the minimum standards applicable to them.
Landfill	WEEE is subject to a dumping ban. The permissible landfill for separated components or materials for WEEE is determined by the minimum standards applicable to it.

5.2.1 General

Waste electrical and electronic equipment is subject to extended producer responsibility. More information on this is provided in [Section 7.2 'Extended producer responsibility'].

5.2.2 Preparing for reuse

For some WEEE, preparation for reuse is possible. Preparation for reuse refers to checking, cleaning or repairing activities whereby products or components of products that have become waste are processed in such a way that they can be re-used for their original purpose (a toaster as a toaster) without any further prior processing. Preparation for reuse includes (but is not limited to) selection, visual inspection, safety and functional testing.

Preparing for reuse is not technically an option for gas discharge lamps.

CENELEC declaration of conformity

CENELEC is the European standards institute mandated by the European Commission to draft standards for the treatment of waste electrical and electronic equipment (WEEE). These have become CENELEC 50625 (processing) and 50614 (preparation for reuse) standards. Before the adoption of the CENELEC standards, treatment operators had to be certified according to the WEEELABEX standard. The CENELEC 50625 standard replaced the WEEELABEX standard. The WEEELABEX organisation has integrated the CENELEC standard into its certification scheme. To date, it is the only organisation accredited to issue the declaration of conformity. The statement of conformity is valid for two years.

The WEEE Order requires treatment operators carrying out WEEE treatment operations other than preparing for re-use[21] to be certified for Cenelec 50625. 'Not certified' means 'not processing'. Subsequently, these certified processors must comply with the provisions of the CENELEC 50625 and, in addition, with the provisions of Article 11 of the WEEE Regulation and with the provisions under or pursuant to the Environment and Planning Act.

5.2.3 Recycling and other recovery

For WEEE and gas discharge lamps, the minimum standard refers to the WEEE Regulationas a requirement for treatment. Minimum recovery rates and specifically preparation for reuse and recycling are included in the scheme. This is stated in Art. 11 of the WEEE Regulation, with reference to Annexes V, VII and VIII of the WEEE Directive. These percentages are applicable to the entire WEEE collected separately, but they also guide the practice of individual treatment operators.

Waste electrical and electronic equipment treatment operators must hold a valid declaration of conformity that is processed in accordance with the applicable standards and specifications of the CENELEC Standard. See the info box in the previous section.

Components and fractions (materials) released during the treatment of waste electrical and electronic equipment must be treated in accordance with the minimum standards specified in the relevant waste plans. This could be recovery. If no waste plans apply to the relevant components or fractions, an assessment should be made against the [waste hierarchy] referred to in section 'guidance tools'.

21 Preparing for re-use can consist of performing a simple repair or sorting operation. This maintains the integrity of the device. Because of the sometimes unclear nature of the operations that require a CENELEX certificate for (waste) electrical and electronic equipment, the ILT has produced a Waste Equipment Flow Chart and Cenelec 50625as a tool.

5.2.4 Incineration as a form of disposal

Incineration as a form of disposal of waste electrical and electronic equipment is permitted as long as the targets in Annexes V, VII and VIII to the WEEE Directive are met. WEEE must be treated in accordance with the WEEE Regulation. The treatment operator for waste electrical and electronic equipment must hold a valid declaration of conformity, which shall be processed in accordance with the applicable standards and specifications of the CENELEC Standard.

Other components and fractions produced in the treatment of waste electrical and electronic equipment must be treated in accordance with the minimum standards specified in the relevant waste plans. This could be incineration. If no waste plans apply to the relevant components and fractions, an assessment should be made against the [waste hierarchy] of this CMP policy framework.

5.2.5 Landfilling

Under the Landfills and Waste Dumping Prohibitions Decree(Bssa), Article 1(1), category 45, a dumping ban applies to electrical and electronic equipment as referred to in the WEEE Regulation. WEEE must be treated in accordance with the WEEE Regulation.

The shredding of WEEE will separate metals (sometimes also other fractions) and leave a residual stream of ‘other shredder waste’. The residual stream that remains must be processed in accordance with the minimum standard set out in the [Shredder waste waste plan]. In this process, an inert residue may eventually have to be dumped, and a landfill ban exemption must be applied for. The inert residue to be landfilled must be limited to a maximum of 5% of the total input from the first shredder. Consideration should also be given to the deposit by third parties of (parts of) fractions deposited for further processing. The minimum standard specifies that to this end guidance must be attached to the shredder waste plant’s permit.

5.3Substances of very high concern (SVHCs) and other substances of concern

SVHCs in the table below are known[22] to be present in WEEE in concentrations above the concentration limit value in [Table 1] in the chapter ‘SVHCs and other substances of concern’. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is listed in the POPs Regulation or on the candidates, restriction or

REACH authorisation list. See also [Section 3.2 ‘Legislation to phase out and restrict use’] of the chapter ‘SVHCs and other substances of concern’.

Waste Processor Acceptance and Processing Policy

Waste treatment operators must pay attention to SVHCs in acceptance and processing procedures (A&V), see [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the ‘Addressing Substances of Very High Concern’ (IPLO) web page and the SVHC-navigator van RIVM.

22Source: SGS Intron, 2019, SVHC in waste.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [Chapter on waste or non-waste].

Overview of relevant SVHCs

A batch of mixed electrical and electronic waste is unlikely to contain SVHCs above the concentration limit in [Table 1] in the 'SVHCs and other substances of concern' chapter, given the heterogeneity (e.g. a container with off-street WEEE or small WEEE collected by supermarkets). Therefore, it is not appropriate to carry out an effective SVHC prevention check. When mixed flows are sorted out into different fractions, SVHCs in these fractions may still exceed the concentration limit.

This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

SVHC	Regulations	Waste and description
Beryllium compounds	REACH Annex XVII (restriction 28)	Used in electronic components and can be found, for example, in relays, electrical contacts and switches.
Cadmium compounds	REACH Annex XVII (restriction 23)	Used as active components in batteries or as additive in electronic components.
1,2-dimethoxyethane (EGDME)	REACH Annex XVII (restriction 30)	In electronic components such as electrodes, sensors, start-ups and batteries.
Lead titanium trioxide	REACH Annex XVII (restriction 63)	In electronic components such as semiconductors and computers.
Lead titanium zirconium oxide	REACH Annex XVII (restriction 63)	Used in the production of ceramic products.
Polychlorinated terphenyl (PCT)	REACH Annex XVII (Restriction 1)	In insulation fluid for electrical systems.
Mercury Mercury compounds	REACH Annex XVII restriction 18 and 18a	In fluorescent lamps (fluorescent tubes and energy saving lamps). *N.B. Fluorescent lamps must be processed in accordance with [Afvalplan for mercury and mercury-added materials and products].*
Nickel	REACH Annex XVII (restriction 27)	In the wiring of fluorescent lamps.

6. Explanatory note on cross-border transport

Classification in the case of shipments of waste

Several procedures are described in the WSR. The information requirement (Article 18nEVOA/ Article 18 EVOA) applies to waste covered by Article 4(4) and (5) nEVOA (Article 3(2) and (4) EVOA). The term 'green list' is also used in daily practice for these wastes. The 'green list' is defined only in the OECD Decision and is part of the Annex III EVOA. In many cases, 'green list waste' can be shipped without notification, provided that it contains the information specified in Annex VII of the EWSR. These are waste that has not been mixed with other waste and can be processed elsewhere without significant environmental burden. The notification procedure applies to waste covered by Article 4(1), (2) and (3) nEVOA (Article 3(1) and (3) EVOA). The term 'orange list' is also used in daily practice for these wastes. The 'orange list' is defined only in the OECD Decision and is included in the Annex IV WSR.

WEEE cannot be classified as 'green list' waste. At the COP15-meetingin 2022, the parties adopted amendments to Annexes II, VIII and IX to the Basel Convention. Since 1 January 2025, the Basel codes applicable to WEEE have been amended. Non-hazardous WEEE is listed in Annex II with the code Y49 and hazardous WEEE is listed under a new code in Annex VIII: A1181. Codes B1110 and B4030 have been deleted, as have the code A1180, which is replaced by the new code A1181. This means that since 1 January 2025, the notification procedure applies to both shipments of WEEE that is hazardous waste and non-hazardous waste. Exceptions to this are intra-EU transfers. Waste classified under codes GC010 or GC020 may be shipped within the EU as 'green list' waste until 1 January 2027. For more information, please see the ILT website.

Illegal exports of WEEE

Illegal export of WEEE is a serious problem, for example by pre-using second-hand equipment instead of waste electrical and electronic equipment when moving outside the borders of a Member State. Annex VI of the Directive (Article 11 of the Arrangement) requires exporters of second-hand equipment to pre-test the functioning of the equipment and to provide documents on the nature of the shipments. This is to prevent waste from being wrongly labelled and exported as second-hand equipment.

7. Other information

7.1Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term 'waste' should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to carry out this assessment itself can be found in [Chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

For WEEE, here is a number of specific points of attention in the assessment of waste or non-waste. These points do not describe the full assessment framework.

Always waste sub-stream

Legislation may require a holder to discard electrical and electronic equipment. For example, a container has an old refrigerator that still contains CFCs and HFCs, or an electric stove that processes asbestos. In that case, the material is waste, regardless of the behaviour and intentions of the holder.

Reuse

In order to determine whether a waste is reused or processed, it is important to determine the holder's intention with the electrical and electronic equipment. If a holder discards or wants to discard the equipment or has to discard it, it is a waste. For example, does the holder supply equipment to the waste collection point or is old equipment exchanged by the installer? This is an indication that the holder wishes to dispose of it and that the material is waste. If the holder wishes to resell equipment, this may be an indication that the equipment is not waste, but that it is reuse. Offering used equipment to a thrift store may also involve reuse. However, when receiving equipment, the store should check that it is suitable for reuse and then only receive the equipment that is suitable for that purpose. In addition, there must be a high degree of certainty that the equipment can be sold again. The assessment of whether a material is waste or non-waste will require a case-by-case assessment of the waste status of the material, based on all the facts and circumstances of that case.

Preparing for reuse

If a holder discards or wants or needs to discard electrical and electronic equipment, this is waste. The recipient then determines the waste treatment that can be used, in accordance with laws, regulations and policies, including those contained in this CMP. If, after simple operations, the product can be put back on the market, it is prepared for reuse. Examples of these operations are cleaning the equipment, testing its operation, and checking for damage. The assessment of preparation for re-use will require a case-by-case assessment based on all the facts and circumstances of each case. Once the preparation for re-use is completed, an assessment of end-of-waste status can be made on the basis of the conditions set out in Article 1.1(6) Environmental Management Actand [Chapter on waste or non-waste].

Recycling

If a holder discards, or wants or needs to discard electrical and electronic equipment, this is a waste. The recipient then determines the waste treatment that can be used, in accordance with laws, regulations and policies, including those contained in this CMP. For equipment that is recycled, the Waste Electrical andElectronic Equipment Regulation (WEEE Regulation) is important. It contains rules on the proper treatment of electrical and electronic equipment (Article 11 of the WEEE Regulation).
For certain treatment operations, a CENELEC certificate is required (Article 11(3) WEEE Regulation). This CENELEC certificate is required for cannibalisation, disassembling usable components and disassembling devices. For more information, please see the Cenelec flowchart(ILT). The different sub-streams from the devices can be used to produce new products. Once the recycling has been completed, the conditions set out in Article 1.1(6) Environmental Management Act and [chapter waste or non-waste] may be used to assess the existence of end-of-waste based on all the facts and circumstances of the case.

International transport and processing

If a person wishes to transport electrical and electronic equipment to another country, this is regulated. If used equipment is shipped for reuse, evidence that it is non-waste must be provided in accordance with Article 11(6) of the WEEE Regulation. Equipment must be tested and labelled. The equipment must also be packaged to ensure it is adequately protected. In addition, the exporter must register (Article 19a of the WEEE Regulation). The ILT checksthis.

For cross-border transport of waste equipment (waste), the WSRapplies. In this case, a notification must always be requested for export to the ILT.

Non-waste on the market

In all cases, where electrical and electronic equipment is placed on the market as non-waste (either directly or after recovery or not), it must comply as a minimum with the applicable product legislation. This includes, for example, REACH, the POP Regulation, the ecodesign rules and the requirements arising from the Commodities Act.

7.2Extended Producer Responsibility (EPR)

EPR schemes aim to ensure that the person placing certain substances, mixtures or products on the market bears, in whole or in part, the financial or organisational responsibility for waste management of those substances, mixtures or products. Important aspects of this waste management are: the level and method of collection and the treatment of the waste. An EPR scheme may take the form of a ministerial scheme or a decision. In addition, it may be a decision declaring a contract for a waste management fee to be generally binding. These different forms of EPR schemes may co-exist and are therefore relevant for one product stream and the resulting waste. More information on the RPV for WEEE can be found on the Electrical and Electronic Equipment - Circular Wastewebsite.

Manufacturers are responsible for the waste management of waste electrical and electronic equipment (Directive 2012/19/EU). Directive 2012/19/EU has been implemented in the Netherlands in the Order on waste electrical and electronic equipment (Regeling afgedankte elektrische en elektronische apparatuur). The EPR legislation on electrical and electronic equipment addresses the need for producers to design and produce EEE in a way that takes account of the environmentally friendly treatment of this equipment once it is 'design for recycling'.

Manufacturers (and importers) of energy-consuming products must demonstrate that they have taken environmental aspects into account in developing these products (Directive 2009/125/EU). These products also comply with implementing measures to be determined ('ecodesign'). The use of lighter, durable and less environmentally harmful components is expected to reduce the generation of waste. Unlike design for recycling, eco-design takes into account not only the material processing stage, but the environmental impact of the product throughout its life cycle.

In the Circular Economy Action Plan, the European Commission has identified product requirements that contribute to:

- the recycling potential of products,
- the possibilities for reparability, resilience, upgrading, disassemblability; and
- the possibilities of identifying particular materials.

The specific requirements of different products are taken into account by the European Commission. These product requirements will be developed in the context of the amendment of the Ecodesign Directive.

It also looks at how to improve the availability of spare parts and technical information on repair. In addition, the Product Design Committee wants to encourage product design by making the financial contribution of producers, as part of producer responsibility, conditional on the end-of-life costs of the products in question. This results in a financial incentive for the design of products that can be more easily recycled and/or reused.

In accordance with the WEEE Directive, Member States of the European Union must ensure that producers of electrical and electronic equipment discarded from treatment achieve established recovery rates. Appropriate processing must also be carried out. As the directive applies in all Member States of the European Union, the minimum standard directly derived from the directive does not lead to an uneven playing field between the Netherlands and neighbouring countries.

Producers are also responsible for the collection and processing of electrical and electronic equipment they place on the market.

For electrical and electronic equipment, a universally binding declaration (AVV) has been in place since 1 March 2021. With the AVV, the OPEN Foundation will implement the extended producer responsibility (EPR) for electrical and electronic equipment on behalf of all producers. All producers are obliged by the AVV to pay the waste management contribution to the OPEN Foundation. Producers are required to report to OPEN Foundation on the quantity of electrical and electronic equipment they place on the market and the waste electrical and electronic equipment they have collected, recycled (including for preparing for re-use), recovered or disposed of, based on their producer responsibility. It reports this to the government.

When supplying a new device, the distributor is obliged to purchase another device similar to the one offered to him.

This also applies in the case of distance selling. Large retail outlets are under an intake obligation. Foundation OPEN facilitates the collection and processing of electrical and electronic equipment at waste collection sites on behalf of the producers.

7.3Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to 'potentially recoverable critical materials'.

According to the report 'Recovery potential secondary critical raw materials based on waste plans in the LAP3' (TNO, 2023), WEEE contains the following potentially recoverable critical materials: antimony, germanium, indium, cobalt, lithium, PGM[23], silicon, tantalum, titanium, vanadium, tungsten and LZAM[5]. For the purpose of recovery, the report considers the waste to be promising. The study also looked at techniques to recover critical materials and where they are available within the EU. Waste processors can use this overview to make choices for developing techniques within the Netherlands or, for example, to cooperate with countries within the EU that have experience with the technique and/or are equipped with capacities to recover certain materials.

[Section 2.3.6 'Critical materials and high dignity'] of the CMP's 'Recycling of waste' chapter provides more information on critical materials in relation to waste treatment.

7.4BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

23PGM is for platinum-group metals and includes palladium, rhodium, osmium and ruthenium, in addition to platinum.
[5] LZAM stands for Light Rare Earth Metals: these are cerium, lanthanum, praseodymium, neodymium, promethium, europium, gadolinium and samarium.

7.5 Citation of the source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

The review of the EU Waste of Electrical and Electronic Directive is currently ongoing Equipment' (WEEE Directive). The Netherlands responded to the consultation for the AEEARichtlijn[24] and put forward a number of issues focusing on the entire life cycle of WEEE. With regard to waste treatment, the Netherlands proposes, among other things, to include CENELEC standards for treatment of WEEE in the Directive in order to ensure a safe level of correct treatment within the EU. The Netherlands is also committed to preventing contamination of output fractions, fire hazards and/or loss of valuable raw materials by separating certain components and materials before they are mechanically fragmented. This latest amendment to the Directive stipulates that the European Commission will assess the need to revise the Directive by 31 December 2026. The revision of the WEEE Directive could potentially lead to changes in this plan in the future.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

24 Public consultation on the evaluation of the WEEE Directive.

Circular Materials Plan Design

EPS Styrofoam waste plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the Tools section.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

Status: Circular Materials Plan draft for public consultation

Sender: Ministry of Infrastructure and Water Management

Date: January 2025

Website: circulaire materials plan.nl

Home > Materials > EPS Styrofoam waste plan

EPS Styrofoam waste plan

This waste plan provides the assessment framework that competent authorities should take into account when granting waste treatment permits and cross-border transport of expanded polystyrene foam (EPS Polystyrene foam, EPS).

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of EPS. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Assessment frameworks

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Future plans

Assessment frameworks

This section of the plan describes how companies should process EPS and the points of interest. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
EPS packaging waste	• Separately collected or post-separated EPSfraction from mixed (plastic) packaging waste (Styrofoam). • EPS packaging material may contain the flame retardant HBCDD[25] in relatively low concentrations (normally < 500 mg/kg[26]).
EPS construction and demolition waste	• EPS construction and demolition waste separated on site; • EPS fraction from mixed construction and demolition waste; • Separated EPS in civil engineering (civil engineering) waste; • EPS from construction and demolition will mainly originate from demolition and consist of EPS produced before the ban[27] on HBCDD under the Regulation (EU) 2019/1021 (the POP Regulation). Therefore, a lot of EPS construction and demolition waste will typically contain HBCDD in concentrations much higher than ≥ 500 mg/kg (5 000 to 10 000 mg/kg). However, the coming years will see an increasing release of EPS construction waste produced after 2016 with HBCDD < 500 mg/kg.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. For high-quality processing or from the perspective of human health

and the environment, it is sometimes necessary to separate contaminants or to remove waste entirely. Keeping waste separate may be necessary for the desired processing operation. The sections below cover the following aspects that are relevant to authorising the processing of EPS:

- mixing permission (2.1)
- minimum standard (2.2)

2.1Mixing of waste

Mixing is designated in the Environmental activities decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements. The [Mixing permit requirement decision tree] is a tool to check whether mixing requires a permit.

25HBCDD (hexabromocyclododecane) is a flame retardant that is present to a greater or lesser extent in (especially the existing stock of) EPS.

26The processing of waste with HBCDD equal to or above the concentration of 500 mg/kg is regulated inRegulation (EU)2019/1021(the POP Regulation). Where ‘500 mg/kg’ is indicated, it refers to ‘the value in Annex IV of the POP Regulation’.

27Since 2016, the POPs Regulation bans the production and marketing of products containing more than 100 mg/kg of HBCDD. Where ‘100 mg/kg’ is indicated, it refers to ‘the value in Annex I of the POPs Regulation’.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
31**	Nga	Expanded polystyrene foam (EPS) with an HBCDD concentration lower than 1000 mg/kg.	This category is primarily intended for EPSpackaging waste. EPS construction waste only falls into this category if it is certain that the concentration of HBCDD is lower than the value given in Annex IV of the POPs Regulation.
112A 112B	ga, respectively Nga	Other waste that may not be dumped pursuant to the Landfills and Waste Dumping Prohibitions Decree [Besluit stortplaatsen en stortverboden afvalstoffen] or a minimum standard in the Circular Materials Plan [Circulair Materialenplan].	EPS construction and demolition waste with a concentration of HBCDD is at least equal to the value given in Annex IV of the POPs Regulation.

* ga = hazardous waste; nga = non-hazardous waste

** The limit of 1 000 mg/kg has been reduced to 500 mg/kg in Annex IV of the POP Regulation. Waste category 31 in Annex II Bal will be adapted accordingly in due course.

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 'Keeping waste separate'].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

This plan includes the following specific provisions for EPS that the AACC should take into account, in deviation from the general assessment frameworks:

Cat. Bal	Allowing mixing in relation to the waste categories
31	By way of derogation from the 'waste mixing' chapter, the competent authority cannot authorise the mixing of recyclable EPS packaging waste with EPS packaging waste within waste category 31 for which recycling is not possible.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of EPS.

2.2 Minimum standard

The processing of EPS must comply with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the processing of EPS:

Component flow	Waste	Minimum standard
a	EPS packaging waste	Recycling. For recycling of EPS packaging waste, the recyclate, material or article produced must not contain HBCDD in concentrations above the concentration limit value set out in Annex I to Regulation (EU)2019/1021(POP Regulation). For packaging waste for which recycling is not possible, e.g. because it is too heavily contaminated or contaminated, the minimum standard is 'other recovery' (e.g. primary use as fuel).

b	EPS construction and demolition waste	Processing in accordance with the provisions of Regulation (EU) 2019/1021(POP Regulation) (Art. and Annex V, Section 1) for the disposal/destruction of the HBCDD. This means that processing is only authorised by D9 (physico-chemical treatment), D10 (incineration on land) or R1 (primary use as fuel or other means of energy generation).[28] Any substances or materials remaining or recovered in a D9 operation where the HBCDD was separated for destruction may be recovered or recycled. The separated HBCDD fraction must always be destroyed or irreversibly transformed (D9 or D10). Processing of EPS construction and demolition waste in a higher quality than that specified in the POPs Regulation is allowed only for those batches of EPS waste that are kept separately and can be demonstrated to be free of HBCDD in concentrations equal to or greater than the concentration limit value set out in Annex IV to the POPs Regulation.

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 ‘Explanation of the minimum standard’].

Wastes containing certain SVHCs

The above minimum standard takes into account the presence of HBCDD. The waste may also contain other SVHCs. Both the legislation described and the assessment frameworks of [Chapter mengen van afvalstoffen] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether the transfer of EPS is permitted. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation(EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by ‘nEVOA’. In other cases, only the ‘WSR’ appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term ‘degree of recovery’ is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase ‘any landfilling or other disposal’. Again, it is the waste after non-material waste has been separated.

28 For the full description of operations D9, D10 and R1, see Annexes I and II of the WFD.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [Section 5.3 'SVHCs and other substances of concern'] provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

The presence of HBCDD has already been taken into account in the assessment framework below. The POPs Regulation requires that HBCDD that is above the concentration limit set out in Annex IV (currently 500 mg/kg) be processed in such a way that it is destroyed, irreversibly transformed or separated for destruction. On the basis of Art. Therefore, Article 7(2) and Annex V, Section 1 of the Regulation only transfer D9, D10 and R1 for EPS construction and demolition waste. The first post-shipment operation is therefore a disposal operation or 'other recovery', regardless of whether the EPS that has been made free of HBCDD is recycled at the same time or afterwards. Therefore, the shipment will always be 'shipment for disposal' (D9 or D10) or 'other recovery' (R1) under EVOA procedures. This waste plan is assumed to include all EPS construction and demolition waste. Deviation from the policy below is only possible if the batches of EPS construction and demolition waste with an HBCDD content of < 500 mg/kg have been demonstrated.

Scope of the assessment framework, grounds and conditions for objection

The following assessment framework applies to all EPS sub-streams as indicated in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for reuse and (preliminary recovery followed by) recycling for component stream a	If the degree of recovery does not justify the shipment. This is the case for EPS packaging waste when a non-reasonable part of the shipped waste is landfilled or otherwise disposed of (grounds for objection 12(1)(b) and (i) of the EWSR Article 12(1)(g)).
Preparing for re-use for component stream b	For EPS construction and demolition waste • This is because material with an HBCDD concentration limit value higher than Annex I of the POPs Regulation cannot be placed on the market; and • only transfers for use as fuel (R1) or for disposal (D9 or D10)[29] are allowed under the POPs Regulation (objection ground 12(1)(b) and (k) nEVOA (Article 12(1)(j) and (k) EVOA)).
(Interim recovery followed by) recycling for component stream b	This is because only shipments for D9, D10 or R1 are allowed due to the presence of HBCDD (ground objection 12(1)(b) and (k) nEVOA (Article 12(1)(j) and (k) EVOA)).

29This concerns disposal operations (D9 and D10) in Annex I and a recovery operation (R1) in Annex II of the Waste Framework Directive.

Other recovery for component flow (a)	This is because higher-quality processing in the form of recycling is possible (objection ground Article 12(1)(a), (b) and/or (n) EVOA (Article 12(1)(a) and, for shipments to the Netherlands, Article 12(1)(k) EVOA)).
Other recovery for component stream b	If the operation is other than R1 (primary use as fuel) (objection ground 12(1)(b) and (k) nEVOA (Article 12(1)(j) and (k) EVOA)).

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
All forms of (preliminary) disposal except landfilling for component stream a	This is because higher-quality processing in the form of recovery is possible (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
All forms of (preliminary) disposal except landfilling for component stream b	Unless the shipment is for D9 or D10[5] (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).
Landfill	This allows for higher quality processing, and • under national self-sufficiency, and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. Specific information is provided in [Section 6 'Waste or non-waste'].

4. Explanatory notes on the scope

This plan covers expanded polystyrene foam (EPS), also known as polystyrene foam. EPS is released in the Netherlands as packaging waste, as waste from construction insulation material (e.g. insulated flooring elements, foundation insulation) and after use as light foundation materials in civil engineering.

POPs and REACH

EPS contains the flame retardant HBCDD, depending on the time and country in which it was produced and the use it was destined for. Both Regulation (EU) 2019/1021(POPs Regulation) andRegulation (EU) 1907/2006(REACH Regulation) contain provisions for this flame retardant:

- REACH Regulation: HBCDD is on the authorisation list (Annex XIV) – it has been from 2015 is no longer allowed to use HBCDD in EPS products;
- POP Regulation: substances containing HBCDD in concentrations greater than the value in Annex I must not be placed on the market; Article 7 of the POP Regulation also provides for waste management provisions for substances containing HBCDD in concentrations greater than the values in Annexes IV and V.

These provisions have been taken into account in the preparation of this waste plan. This is because the waste plan cannot deviate from legal provisions. For this reason, and in order to keep the processing of EPS waste manageable, the waste plan distinguishes between the following policies:

- EPS packaging waste: this is based on the assumption that no flame retardant has been added to it, and therefore the HBCDD concentration, if any, is below the limit of 500 mg/kg, so that the provisions of Article 7 of the POP Regulation do not apply.
- EPS construction and demolition waste: EPS insulation material produced between 1975 and 2015 mostly contains HBCDD ≥ 500 mg/kg. Given the long period of use of insulation material (estimated to be 60 years on average[30]), EPS waste containing ≥ 500 mg/kg of HBCDD will be released even longer during, in particular, renovation and demolition work. This is subject to the waste management provisions of Article 7 of the POP Regulation.

EPS from new construction material (produced from 2016 onwards) must not contain HBCDD above the limit value set out in Annex I to the POPs Regulation, but is not described as a separate waste stream in this Waste Plan. This has been chosen because it is not easy in practice to distinguish between and especially after separate collection. This waste plan therefore assumes that all EPS from construction and demolition activities must be processed according to provisions in the POP Regulation in the coming years, because the HBCDD concentration exceeds the limit value set out in Annex IV of the Regulation. However, this is not the case if it can be demonstrated that the EPS construction and demolition waste does not contain HBCDD in concentrations equal to or higher than the limit value set out in Annex IV of the POPs Regulation.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Unseparated EPS in the residual waste (typically EPS packaging or EPS construction materials in mixed CDW)	[Residual waste plan] [Waste plan mixed construction and demolition waste]
Plastics other than EPS	[Plastics waste plan]
XPS (extruded polystyrene foam, including blue plate)	Processing according to the [waste hierarchy] as described in section ‘guidance tools’.
PUR/PIR insulation panels	[PUR/PIR Insulation Waste Plan]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 170203; 170204*; 200139.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 ‘Mixing permission’] sets out the assessment framework for allowing the mixing of [waste]. In the case of ‘mixing’, this is described in [Section 4.1 ‘Definition of mixing’] of the ‘waste mixing’ chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep EPS separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that ‘mixing’ is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

30Source: RIVM (2023) Case of flame retardants in EPS (polystyrene foam).

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	In the construction and demolition sites of construction works, there is a legal requirement to keep EPS separate and separate from that which constitutes hazardous waste generated by the actual performance of construction and demolition work on construction works *(Art.*). *7.24, 7.25 and 7.26 Environmental Structures Decree)*.
Keeping industrial waste and hazardous waste separate *(general)*	Companies must keep EPS packaging waste separate and dispose of it separately from other waste unless they have a mixing permit *(Art.*). *3.195 and art. 3.196 Bal and 'mixing of waste' chapter*. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to 'disposers' before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Businesses must keep EPS packaging waste separate and dispose of it separately if required by the CMP*(Art.*) *3.39 Bal)*. In [Keep waste and hazardous waste separate] is indicated if it is the case for EPS packaging waste. A company that has to keep EPS packaging waste separate according to the CMP still wants to mix with other wastes. Authorisation is required. Chapter

	‘Mixing of waste’ from the CMP and [section 2.1] of this waste plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep EPS that is delivered separately separated by waste category *(Art.) 1b. Waste Collection Decree)*.
Recycling centre *(Bulky household) waste)*	EPS is one of the 18 streams for which the waste collection point must have a storage facility or provide information on where individuals can go if the waste collection point does not take up the waste itself *(Article*). *4.623 Bal).* For EPS, the competent authority may issue a specific requirement authorising the collection point not to have a separate collection facility, but to store it as a smart mixture. Conditions include that it is impossible to have a separate facility for all 18 wastes and that the same level of waste separation is achieved through post-separation or other measures. In any case, EPS must not be mixed with the residual container. See [chapter on separate collection of household waste]. Article 4.623 (receipt of bulky waste at the collection point) of the Bal makes no distinction between EPS construction or demolition materials and EPS packaging. EPS demolition material often contains a concentration of HBCDD much greater than 500 mg/kg (5 000 to 10 000 mg/kg), which requires the waste to be kept separate under the POP Regulation and to undergo processing that destroys HBCDD. Since, in the practice of a recycling centre, it is not possible to verify that EPS construction and demolition waste has an HBCDD level of less than 500 mg/kg, mixing packaging and construction and demolition EPS must be considered to mean that the entire batch may no longer be normally mechanically recycled under the POP Regulation. The batch must receive processing that destroys the HBCDD. It is therefore desirable to store EPS construction and demolition separately from EPS packaging waste at the collection point and to dispose of it for different forms of processing (see explanatory note to the minimum standard). A letter from the Ministry of Infrastructure and Water Management to the VNG requesting separate collection of EPS construction waste with EPS packaging waste of 15 June 2018 (reference No IENW/BSK-2018/108121). [Chapter on separate collection of household waste] specifically addresses separation at the collection point.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of ‘mixing’. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.2 ‘Mixing of hazardous waste’]
- [Section 4.2.4 ‘Mixing of POP-containing waste’] and/or [Section 4.2.3 ‘Mixing of waste containing PBT or vPvB substances or substances of ‘equivalent care’]

Always check with all of the section’s assessment frameworks whether they apply to the mixing of EPS.

The essence of allowing the mixing of EPS is that processing in accordance with the minimum standard should remain possible after mixing. For EPS, this means that:

- by way of derogation from the ‘Mixing of waste’ chapter, cannot authorise mixing within waste category 31 of recyclable EPS packaging waste with EPS packaging waste for which recycling is not possible.
- can authorise the mixing of EPS packaging waste and EPS construction waste within waste category 31 if the company has demonstrated that the concentration of HBCDD in the construction waste is less than 500 mg/kg and that the waste is recycled. In practice, the HBCDD levels in EPS construction and demolition waste are not clear.
- may authorise the mixing of EPS construction and demolition waste for incineration within waste category 112A or 112B, between these waste categories or with other waste in waste category 112 or non-waste. However, there is a processing method for EPS construction and demolition waste that separates the HBCDD, after which it is destroyed, leaving purified polystyrene that can be recycled. It is therefore desirable not to use EPS construction and demolition waste with an HBCDD concentration greater than 500 mg/kg

to be mixed with other waste to be incinerated if the processing method for separation of HBCDD is possible.

In all cases, the mixing of EPS construction waste (waste category 112A and 112B) must not be in contravention of the provisions of the POPs Regulation (Article 7(2) and Annex V, Part 1). This means that only mixing and subsequent processing by D9 (physico-chemical treatment), D10 (incineration on land) or R1 (primary use as fuel or other means of energy generation) is allowed, in order to proceed with the disposal/destruction of the HBCDD. The assessment framework in [Section 4.2.4 ‘Mixing of POP-containing waste’] of the ‘Mixing of waste’ chapter also describes two situations where mixing can also be authorised.

Under the Bal, Article 4.623(1)(i), EPS must be stored separately at the municipal waste collection point. The decision gives, under certain conditions, an option to deviate from it by using a tailor-made rule and collecting EPS as a ‘smart mixture’. The conditions include a waste collection site that does not have enough space to collect all 18 required waste separately and that a similar level of recycling can be achieved. A smart mixture is never a combination with the residual container, but always with another source-segregated waste. However, for recycling, separation at the source provides the cleanest material stream.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Reuse does not imply waste treatment. [Section 6.1] describes the possibilities for re-use if known.
Preparing forre-use	Allowed only for EPS that contains no substances that are no longer placed on the market due to legislation or regulation (Annex I of the POPs Regulation). This concerns, in particular, EPS packaging.
Recycling	Recycling is the minimum standard for EPS packaging waste. Recycling of EPS construction and demolition waste containing HBCDD ≥ 500 mg/kg without destroying/disposing of the HBCDD is not permitted under the POP Regulation.
Other usefulapplication	For EPS packaging waste, other recovery is in principle not allowed, as recycling is possible (exceptions). For EPS construction and demolition waste containing (possibly) HBCDD ≥ 500 mg/kg, main use as fuel (R1), which is a form of other recovery, is allowed under provisions in the POPs Regulation.
Incineration as a formof disposal	Incineration is not permitted for EPS packaging material as recycling is possible. However, incineration as a form of disposal (D10) is permitted for EPS construction and demolition waste containing (possibly) ≥ 500 mg/kg, subject to the provisions of the POPs Regulation.
Landfill	EPS packaging material and EPS construction and demolition waste are subject to landfill bans.

5.2.1 Preparing for reuse

The Competent Authority may authorise a processing operation leading to the reuse of EPS packaging materials. EPS packaging material has a relatively low concentration of HBCDD. Only if the HBCDD concentration is below the value given in Annex I of the POPs Regulation may the material be placed on the market again. The HBCDD concentration limit in Annex I is currently a maximum of 75 mg/kg for all applications except for the use of recycled polystyrene in the production of EPS and XPS insulation material. For this, the HBCDD concentration limit is 100 mg/kg. This processing operation complies with the minimum standard.

EPS construction and demolition waste with an HBCDD concentration above Annex IV of the POPs Regulation (currently: 500 mg/kg) must be processed in accordance with the provisions of the POPs Regulation. Preparing for re-use is not subject to the permitted processing options.

5.2.2 Recycling

EPS packaging waste

For EPS packaging, recycling is the minimum standard. EPS packaging waste is currently largely recycled, in particular to insulation applications in construction. It can be pressed both under heating and compressed by dissolving. In both cases, the polystyrene will become available as a raw material for the plastics processing industry. Deviations from this minimum standard are only possible under certain conditions (see other recovery options).

EPS construction and demolition waste

Recycling is, in principle, permitted only for lots that have been shown to contain less than 500 mg/kg of HBCDD. Otherwise, recycling of EPS construction and demolition waste is not permitted under the POPs Regulation. Recycling is only permitted if the HBCDD is separated from the EPS and then destroyed. The provisions of the POPs Regulation are aimed at destroying the flame retardant HBCDD, and not at destroying the EPS material as a whole. Therefore, the POPs Regulation and the CMP allow the D9 operation whereby physical/chemical treatment separates the HBCDD for a subsequent disposal operation and the polystyrene becomes available for recycling. These include, for example, the following techniques:

- dissolution of the material separating most of the HBCDD from the EPS for destruction. The remaining polystyrene contains much less HBCDD and is eligible for new use. The HBCDD is removed from the solvent and can be reused. The HBCDD is destroyed by burning, where bromine is recovered. This processing of HBCDD-containing EPS by D9 (chemical/physical treatment to separate the HBCDD) followed by D10 (incineration of an HBCDD fraction) complies with the POP Regulation.
- chemical recycling where EPS and HBCDD are both broken down, e.g. gasification to methanol. In this alternative, the polystyrene is lost in itself, but it is
  the carbon is recycled. This processing of EPS containing HBCDD by D9 (chemical/physical treatment) complies with the POP Regulation.

EPS with concentrations of HBCDD above the limit value set out in Annex I of the POPs Regulation must not be placed on the market. This is a focus point when authorising EPS recycling.

5.2.3 Other recovery

EPS packaging waste

Depending on how EPS packaging reaches the waste stage, recycling may not be possible. The minimum standard specifies that other recovery is permitted for 'non-recyclable EPS packaging'.

Section 2.4.1 'The minimum standard includes certain exceptions' of the [Guide to the use of minimum standard] describes how a company should demonstrate this.

In many cases, this will mean that the EPS is incinerated with energy recovery (R1), for example in an incineration plant. Companies that wish to process EPS waste in a way other than recycling will include in the acceptance policy that they will accept this packaging only if it is demonstrated that the waste is not suitable for recycling. The acceptance policy should specify how this is to be demonstrated by disposers and how it is administered by the processor.

If these wastes are transferred (to or from the Netherlands) for the same reason, the notification file must contain the information described in [Section 2.4.1 'The minimum standard contains exceptional provisions'] of the 'Guide to the use of minimum standard'.

EPS construction and demolition waste

If the concentration of HBCDD exceeds 500 mg/kg, recovery of EPS is not permitted, except for R1 where HBCDD is destroyed. This is provided for in the POPs Regulation. This is usually the case for EPS insulation material from demolition.

5.2.4 Incineration as a form of disposal

Incineration as a form of disposal is only permitted for EPS construction and demolition waste. EPS insulation material from demolition is currently often incinerated. This is because waste volumes are relatively low, there is no collection structure and the costs of keeping waste separate and disposing of it separately to a treatment other than an incineration plant are relatively high. Incineration as a form of disposal is in line with the provisions on processing in the POPs Regulation (D10) and complies with the minimum standard.

5.2.5 Landfilling

Under Article 1(1) of theLandfills and Waste Dumping Prohibitions Decree(BSSA), EPS is subject to a dumping ban under category 15b (sub-streams or residues from processing of domestic residual waste), 16b (sub-streams or residues from processing of bulky household waste) and/or 29b (sub-streams or residues from mixed construction and demolition waste). EPS with an HBCDD content above the value set out in Annex IV to the POPs Regulation must also not be landfilled under that Regulation. More information on the dumping bans can be found in [Preparing and implementing a dumping ban chapter].

5.3Substances of very high concern (SVHCs) and other substances of concern

SVHCs in the table below are known[31] to be present in EPS in concentrations above the concentration limits in [Table 1] of the chapter 'SVHCs and other substances of concern'. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with thePOP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, theREACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 'Legislation to phase out and restrict use'] of the chapter 'SVHCs and other substances of concern'.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the 'Addressing Substances of Very High Concern' (IPLO) page and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

The table below provides a (non-exhaustive) list of SVHCs that may be present in [Table 1] of the chapter 'SVHCs and other substances of concern' above the concentration limit in EPS. The minimum standard in the CMP already takes into account the presence of HBCDD in EPS. This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

SVHC	Regulations	Waste and description

31Source: SGS Intron, 2019, SVHC in waste.

Hexabromocyclododecane (HBCDD)	POPs Regulation	in expanded polystyrene foam (EPS) on construction and demolition waste (substance used as a flame retardant in EPSinsulation panels).

6. Other information

6.1Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term 'waste' should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to carry out this assessment itself can be found in [chapter waste or non-waste] of the CMP and theGuide waste or non-waste.

For EPS, a number of specific points of attention follow when assessing waste or non-waste. These points do not describe the full assessment framework.

Always waste sub-stream

Under the POPs-Regulation, substances containing HBCDD in concentrations greater than 100 mg/kg may no longer be placed on the market (see Article 3 and Annex I of the POPs Regulation). For EPS construction and demolition waste, the flame retardant HBCDD has historically been applied in concentrations ≥ 1000 mg/kg. If the concentration exceeds 1 000 mg/kg, there is a legal obligation to discard a material and, regardless of the behaviour and intentions of the holder, the material is waste. The POP Regulation also contains provisions on waste management for substances containing HBCDD in concentrations ≥ 1000 mg/kg (Annex IV). This waste must be processed in accordance with Article 7 of the POP Regulation.

Reuse

EPS packaging material may also contain the flame retardant HBCDD, but in relatively low concentrations. For EPS packaging material containing HBCDD in concentrations below 100 mg/kg, the marketing restriction (for HBCDD) in the POP Regulation does not apply.

In order to determine whether there is reuse or waste, it is important to establish the intention of the holder with the EPS packaging material. If a holder discards, wishes to discard, or is required to discard, the EPS constitutes waste. For certain packaging types of EPS, such as protective materials and boxes, it is possible to reuse them (on their own). However, the suitability for reuse should be assessed. For example, the EPS must still be clean and dry to be used again for the same purpose. In addition, sufficient certainty must be given that reuse will actually take place. The assessment of whether a material is waste or non-waste will require a case-by-case assessment of the waste status of the material, based on all the facts and circumstances of that case.

End-of-waste

If a holder discards or intends or is required to discard the EPS packaging, this constitutes waste. The recipient then determines the waste treatment that can be used, in accordance with laws, regulations and policies, including those contained in this CMP. Separately collected clean and dry EPS packaging can be delivered to the recycler after collection. Here, the EPS packaging material is broken into original EPSpearls and mixed with it, without further processing, for the production of new EPS products. The EPS packaging material is used as waste and recycled. After the recycling has been completed, an assessment of whether end-of-waste is present can be made on the basis of the conditions set out in Article 1.1(6) Environmental Management Act(Wm) and [Chapter on waste or non-waste], taking into account all the facts and circumstances of that case.

If the used EPS packaging material is not clean and dry, it means that it cannot be used for the original purpose or made suitable. It will then have to be processed differently as waste. This waste treatment may be another recycling operation or recovery operation, provided that it is permitted by law, regulation or policy, such as that contained in this CMP. Once this processing operation has been completed, an assessment of the existence of end-of-waste can be made on the basis of the conditions set out in Article 1.1(6) WM and [Chapter on waste or non-waste], based on all the facts and circumstances of the case.

Non-waste on the market

In all cases, where EPS is placed on the market as non-waste (either directly or after recovery or not), it must comply with the applicable product regulations as a minimum. This includes, for example, REACH, the POP Regulation and the requirements following from the Commodities Act.

6.2Labelling requirements

For the sake of completeness, it is stated that the amendment to Annex A of the Stockholm Convention,and in particular the new Section VII inserted in that Annex, stipulates that expanded polystyrene containing HBCDD placed on the market (possibly authorised) must be clearly identifiable by labelling or other means throughout its life cycle. Note (i) in Annex A Part I of this Convention states that *unintentional trace contaminants* (UTC) are not affected.

In Regulation (EU) 2029/1021(POP Regulation),[32] HBCDD is/is included in Annex I with a UTC value of 75 mg/kg when it is present in substances, mixtures or objects (flame-retardant objects). One exception is the use of recycled polystyrene in the production of EPS and XPS insulation material to be used in buildings or civil engineering works. UTC equal to or less than 100 mg/kg applies.

6.3Recovering critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. From

certain waste may be recovered or developments are ongoing for this purpose. We refer to ‘potentially recoverable critical materials’.

EPS is not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report ‘Recovery potential secondary critical raw materials based on waste plans in the LAP3’ (TNO, 2023).

[Section 2.3.6 ‘Critical materials and high dignity’] of the CMP’s ‘Recycling of waste’ chapter provides more information on critical materials in relation to waste treatment.

6.4BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

6.5References to sources

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

32Once the value of Annex I has been finally added to the POPs Regulation, the text will be adapted accordingly. See also the *Commission Delegated Regulation (EU) 2024/2555of 21 March 2024 amending Regulation (EU) 2019/1021 of the European Parliament and of the Council as regards hexabromocyclododecane*

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

Processing techniques comply with the requirements of the POPs Regulation for the destruction of HBCDD, with the simultaneous or subsequent recovery/recycling of the polystyrene. If sufficient processing capacity is built up and the requirements for increasing the minimum standard pursuant to the provisions of [Chapter on minimum standard for processing] are met, the minimum standard will be amended and recycling of polystyrene after destruction of HBCDD will become the minimum standard.

As the concentration limit of HBCDD set out in Annex IV of the POP Regulation has been reduced from 1 000 mg/kg to 500 mg/kg, category 31 of Annex II Bal will be adjusted. As soon as this adaptation is carried out, the text of [the waste categories] of this waste plan will be adapted.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Gypsum waste plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

Status: Circular Materials Plan draft for public consultation

Sender: Ministry of Infrastructure and Water Management

Date: January 2025

Website: circulaire materials plan.nl

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Gypsum waste plan

This waste plan provides the assessment framework that competent authorities should take into account when granting permits for waste treatment and the cross-border transport of gypsum.

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of gypsum. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Future plans

Assessment frameworks

This section of the plan describes how companies should process gypsum, including the focus points. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
Gypsum	This waste consists essentially of gypsum in the form of plaster blocks (pieces), plaster boards and plaster casts mainly originating from construction, decoration, etc. These are gypsum arising from the following sources: • Gypsum delivered separately at source (construction and demolition sites, recycling centre); • Gypsum separated from sorting installations; • Gypsum production waste.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The paragraphs below address the following aspects that are relevant for authorising gypsum processing:

- mixing permission (2.1)
- minimum standard (2.2)

2.1Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check whether mixing requires a permit.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
51	Nga	Gypsum, plaster blocks, plasterboard	Gypsum, plaster blocks, plasterboard which: • separated at source and delivered separately (construction and demolition sites, recycling centre) • separated from sorting facilities or • released as production waste.

110	GA	Other hazardous waste that may be disposed of in a landfill in accordance with the Landfills and Waste Dumping Prohibitions Decree or a minimum standard in circular Materials Plan	Gypsum, not suitable for recycling, that is hazardous waste. Below: • falls gypsum if the moisture content is more than is 10%; • falls into gypsum if the material contains hazardous substances; or • fallen gypsum boards glued to insulating material.
111	Nga	Other non-hazardous waste that may be dumped pursuant to the Landfills and Waste Dumping Prohibitions Decree [Besluit stortplaatsen en stortverboden afvalstoffen] or a minimum standard in circular Materials Plan	Gypsum, not suitable for recycling, that is not a hazardous waste material. Below: • falls gypsum if the moisture content is more than is 10%; • falls into gypsum if the material contains hazardous substances; or • fallen gypsum boards glued to insulating material.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 ‘Keeping waste separate’].

2.1.2 Mixing permission

The competent authority assesses a permit application for mixing against the [hoofdsteak mixing of waste] and the assessment frameworks included therein. This plan does not contain any specific provisions for gypsum that should be taken into account by the competent authority in derogation of the general assessment frameworks. [Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of gypsum.

2.2Minimum standard

Gypsum processing must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to gypsum processing:

Component flow	Waste	Minimum standard
a	Gypsum	Recycling.
b	Gypsum not suitable for recycling. This is: • gypsum with a moisture content of more than 10%; or • plaster containing dangerous substances; or • panels of drywall bonded with insulating material; or • gypsum for which the recycling route is so expensive that the costs of handing these batches to the disposer’s gate would exceed 265 euros/tonne.	Deposit at a suitable landfill.

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 ‘Explanation of the minimum standard’].

Wastes containing certain SVHCs

SVHCs may be present in the waste. Both the legislation described and the assessment frameworks of [Chapter mixing waste] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. More information can be found in [section 5.3 of this plan].

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether the transfer of gypsum is permitted. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Scope of the assessment framework, grounds and conditions for objection

The assessment framework below applies to all gypsum sub-streams as specified in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection

Preparing for re-use for component flow a	If the degree of recovery does not justify the shipment. With regard to gypsum, any landfilling or other disposal is too high (grounds for objection 12(1)(b) and (i) nEVOA (Article 12(1)(g) EVOA)).
Preparing for re-use for component stream b	Due to the nature of the waste, not applicable.
(Interim recovery followed by) recycling	If the degree of recovery does not justify the shipment. This is the case where the recycling rate is lower than that used for gypsum processing in the Netherlands. In addition, for recyclable gypsum, any landfilling or other disposal is too much (grounds of objection 12(1)(b) and (i) nEVOA (Article 12(1)(g) EVOA)).
Other recovery	This is because higher-quality processing in the form of recycling is possible unless: • the notification shows that recycling is not possible due to the nature or composition of the waste; or • that the cost of recycling exceeds EUR 265 per tonne and, • some of the shipped waste will not be landfilled or otherwise disposed of. (ground for objection Article 12(1)(a), (b) and/or (n) EVOA (Article 12(1)(a) and, for transfers to the Netherlands, Article 12(1)(k) EVOA)). This prohibition also applies to transfers for backfilling or recovery in the deep substratum, as well as to the manufacture of mortars for backfilling operations.

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
All forms of (preliminary) disposal except landfilling for component stream a	This is because higher-quality processing in the form of recovery is possible (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
Incineration as a form of disposal for component stream b	Because incineration is not a realistic processing route for this waste stream.
Other forms of (preliminary) disposal other than incineration as a form of disposal or dumping for component stream b	If the processing results in a fraction being landfilled due to <u>national self-sufficiency</u>; and in the case of transfer to the Netherlands due to national legal provisions if a part is landfilled (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (objection ground Article 11(1)(a) and (b) EVOA)).
Landfill	Because of the higher quality processing possible, and/or • under national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. [Section 6.1 'Waste or non-waste'] provides specific information on this.

4. Explanatory notes on the scope

This plan applies to separately kept or separated gypsum arising mainly from construction and demolition activities. Waste gypsum generated by other activities, such as stand and set construction and production of gypsum elements, and similar to gypsum generated by construction and demolition works is also covered by this waste plan. Flue-gas desulphurisation gypsum (RO gypsum) is specifically not included in this waste plan.

Gypsum material

Natural gypsum is mined either in opencast mines or in underground mines. The purity of natural gypsum is 75% to 95% calcium sulphate and the rest is clay and lime. Auxiliary materials may be added in the production of building materials or other gypsum products. For example, drywall may contain glass fibre and silicone.

Gypsum waste is produced in a very clean to reasonably clean form in the production, construction, demolition and flue gas cleaning sectors. In addition, the collection point handles gypsum waste. Gypsum from the sorting of mixed construction and demolition waste contains the most contaminants.

Plaster is often mentioned in breath with aerated concrete, but this is another material. Aerated concrete gypsum contamination and vice versa complicate the recycling of both wastes. Plaster blocks and aerated concrete are clearly distinguishable from one another.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
RO gypsum from power plants	[Waste plan residues coal-fired power plants]
Gypsum arising from industrial production processes	[Waste plan process-dependent industrial waste]
RO gypsum arising from various waste incineration plants and large combustion plants	Process according to the [waste hierarchy] in the 'Chapter on High-Quality Processing'.
Gypsum associated with asbestos, where the concentration of serpentine asbestos plus 10 times the concentration of ambigola best exceeds 100 mg per kg of dry matter	[Waste plan asbestos-containing waste]
Gypsum waste from hospitals	[Care waste plan]
Gypsum-containing mixed construction and demolition waste	[Waste plan mixed construction and demolition waste]
Mixed wastes consisting of more than 27% of gypsum arising from the galvanic or chemical industry or other production processes	[Waste plan sulphur-containing waste]
Mixed sorting fractions from the processing of construction and demolition waste, commercial waste with a comparable composition, residual household waste with a comparable composition, and domestic waste resulting from the conversion of unsorted waste from private individuals	[Waste plan mixed construction and demolition waste]
Aerated concrete	[Waste plan autoclaved aerated concrete]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 170801*; 170802.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for allowing the mixing of [waste]. In the case of 'mixing', this is described in [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep gypsum separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	At construction and demolition sites, there is a legal requirement to keep the gypsum separate and separate and discharge that is released during the actual performance of construction and demolition work on construction works (*Art.*). *7.24, 7.25 and 7.26 Living Environment Law (Structures) Decree*). This also applies to mobile rubble crushers temporarily present at construction and demolition sites (*Besluit bouwwerken leefomgeving, Section 7.2 Mobile crushing of construction and demolition waste*).
Keeping company waste and hazardous waste separate (general)	Businesses must keep gypsum waste separate and dispose of it separately from other waste unless they have a mixing permit (*Art.*). *3.195 and art. 3.196 Bal and 'mixing of waste'* chapter). [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate (prior to collection or delivery)	The following rules apply only to 'disposers' before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Businesses must always keep gypsum waste generated during production separate by waste category and dispose of it separately (*Art.*). *3.39 Ball and Mixing Chapter]*). A company that nevertheless wants to mix gypsum waste with other waste needs a permit. [Waste mixing chapter] of the CMP and [Section 2.1] of this waste plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep gypsum waste separately collected by waste category (*Article*). *1b of the Waste Collection Decree*).

Recycling centre (bulky household waste)	Gypsum waste is one of the 18 wastes for which the waste collection point must have a storage facility or indicate to private individuals where it is not collected by the waste collection point itself (*Article*). *4.623 of the Bal*). For gypsum waste, the competent authority could, by means of a tailor-made provision, authorise the collection site not to have a separate collection facility, but to store it as a smart mixture. Conditions include that it is impossible to have a separate facility for all 18 wastes and that the same level of waste separation is achieved through post-separation or other measures. However, for gypsum waste, it is not possible to achieve this equal level of waste separation by post-separation. Therefore, a custom instruction cannot be used by the competent authority to authorise this mixing. [Chapter on separate collection of household waste] specifically addresses separation at the collection point.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of ‘mixing’. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.2 ‘Mixing of hazardous waste’]
- [Section 4.2.5 ‘mixing prior to or during landfilling’]

Always check with all assessment frameworks in the chapter if they are applicable to gypsum mixing.

The essence of allowing gypsum mixing is that processing in accordance with the minimum standard should remain possible after mixing. In the case of gypsum, this means that:

- The competent authority can only authorise the mixing of gypsum waste (waste category 51) with each other, with other gypsum waste or non-waste if recycling of the mixture is possible. This means that the mixture meets the acceptance criteria of the recycling company. Other gypsum wastes include, for example, gypsum from waste substance category 74 (waste gas cleaning gypsum from coal-fired power plants), 111 (waste gas cleaning gypsum from waste incineration plants) and 112B (medical gypsum).
- Mixing of gypsum waste with aerated concrete (waste category 52) can only be allowed if the company has demonstrated that gypsum recycling is not possible or is more expensive than €265.- per tonne.
- The competent authority may authorise the mixing of non-recyclable gypsum and other waste within or between waste categories 110 and 111 for landfill purposes if the company has demonstrated that recycling is not possible or is more expensive than 265 euros/tonne and the permit application meets the assessment framework of [chapter immobilisate, filler or aggregate].

However, it is preferable to keep gypsum as clean as possible throughout the entire chain. When disposers and businesses separate gypsum from aerated concrete, stony waste and other waste, they promote both the recycling of gypsum and the recycling of other fractions of construction and demolition waste.

5.2 Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Reuse does not imply waste treatment. [Section 6.1 ‘Waste or non-waste’]] describes the possibilities for re-use if known.
Preparing forre-use	Preparing for re-use of gypsum plasterboards or gypsum blocks may be possible in the case of production waste or construction materials that are released in good condition from demolition activities and the gypsum is not contaminated. Preparation for reuse is permitted on the basis of the minimum standard.

Recycling	If waste gypsum is sufficiently pure and not too wet, recycling is possible and therefore the minimum standard. For example, by recycling gypsum-plasterboards, fibre-plasterboards, gypsum blocks, cast floors and stucco-gypsum. An contaminated load of gypsum can be sorted unless the gypsum contains asbestos or other dangerous substances or an excess of moisture.
Other usefulapplication	Other recovery is only allowed for non-recyclable gypsum. The possibilities for this are limited.
Incineration as a formof disposal	Burning of non-recyclable gypsum is not an appropriate treatment, as this waste has no calorific value.
Landfill	A dumping ban applies to gypsum. Furthermore, the high leaching of sulphate can make the dumping of gypsum environmentally harmful.

5.2.1 Preparing for reuse

Preparing for re-use involves recovery by checking, cleaning or repairing, whereby products or components of products, which have become waste, are prepared for reuse without any further pre-treatment being necessary. Preparation for reuse of uncontaminated gypsum waste is possible. For example, in the case of gypsum plasterboards or gypsum blocks released during demolition operations, which are not mixed or bonded with wallpaper, tiles, stucco, aerated concrete or other building materials. This gypsum can be used as a second-hand building material. In addition, preparing second-hand building materials for re-use by second-hand building materials traders is not subject to authorisation *(Art.*). *3.190 Bal)*.

5.2.2 Recycling

The minimum standard for gypsum is recycling. In general, this involves processing into gypsum building materials.

5.2.2.1 Recycling to gypsum (products)

The report ‘Concretizing conditions preventing recycling as minimum standard’ (RHDHV, 2022a) states that, in principle, recycling pure gypsum is always possible. There are several gypsum recycling companies active in the Netherlands. Processing gypsum consists of pre-sorting, further refining and reduction:

- Pre-sorting is concerned with the separation of contaminants, such as cellular concrete, fibreboards, glass, bitumen, aluminium-coated plasterboard, lead-coated plasterboard, vinyl-coated plasterboard, laminate-coated gypsum boards, insulating boards, cement boards, lime plaster, horse-hair plaster and other (construction) materials. Pre-sorting can be carried out by recycling firms or by sorting firms.
- After pre-sorting, gypsum remains that only contains cardboard and screws, and that no more than small quantities of plastic wood slats and/or pieces are allowed. Mechanical separation of these contaminants and subsequent reduction of gypsum takes place in the purification step. This process leaves fine gypsum powder, which is mainly deposited with gypsum producers.

Gypsum is not suitable for processing into a building material due to sulphate leaching.

5.2.2.2 Use as fertiliser

Gypsum waste contains lime, which is an nutrient component of manure. The use of gypsum waste as a fertiliser is recycling and must be compatible with the Fertilisers Actor the Fertilisers Regulation.

5.2.2.3 Where gypsum is non-recyclable

The minimum recycling standard does not apply if the gypsum is not recyclable. This can be the case in the following two situations:

Waste cannot be technically recycled *due to its nature and composition*. Some waste is contaminated to such an extent that incineration or dumping is the only processing option, even if the material produced by this waste could, if it had not been contaminated, be recycled to a large extent. In any case, gypsum waste is not recyclable if it is:

- has a moisture content of more than 10%;
- contains contamination by dangerous substances or asbestos; or
- consists of gypsum boards bonded with insulating material.

In addition, the report ‘Concretising conditions that prevent recycling as a minimum standard’ (RHDHV, 2022a) shows that companies can sort or separate certain contaminants from the gypsum waste. These include fibreboards, glass, bitumen, aluminium-coated plasterboard, lead-coated plasterboard, vinyl-coated plasterboard, laminate-coated plasterboard, insulated gypsum boards, cement-faced plaster, horse-hair plaster, aerated concrete and other construction and demolition materials. If the above contaminants cannot be separated, for example due to a too small particle size, the gypsum is also non-recyclable.

Recycling is relatively costly if there are certain (specifically contaminated) waste types. The ‘too expensive’ limit is EUR 265 per tonne of waste. Section 2.4.1 ‘The minimum standard includes certain exceptions’ of the [Guide to the use of minimum standard] describes how a company should demonstrate this. The costs that may be included in the calculation of the amount of 265 are described in [Section 5.3.2 ‘What is included in the limit of EUR 265?’] of the ‘Use of the cost criterion’ section. If, for the same reason, these wastes are transferred for another method of processing (to or from the Netherlands), the notification file must contain the information described in [paragraph 5.4 ‘Export and the limit value of EUR 265 per tonne’] of the ‘Use of the cost criterion’ section.

The reason for including the criterion of EUR 265 per tonne of waste in the minimum standard of this plan is that the recycling of gypsum waste is often possible, but more contaminants mean more sorting work. This means higher processing costs. The report ‘Fact-finding study on Recycle Tariff – An investigation into 32 waste streams’ (IPR Normag, 2023) shows that this rate is reasonable, as recycling costs range from EUR 30 to EUR 105 per tonne.

5.2.3 Other recovery

For recyclable gypsum, the Authority cannot authorise other forms of recovery, as this is lower than the minimum standard. However, other forms of recovery may be authorised for non-recyclable gypsum. Such gypsum should, however, be suitable to replace primary materials that should otherwise have been used for that function.

Processors that process gypsum waste for which it has been demonstrated that it is not recyclable should include in the acceptance policy the acceptance of gypsum only if it has been demonstrated that the waste is not suitable for recycling or that recycling is more expensive than EUR 265.- per tonne. The acceptance policy should specify how this is to be demonstrated by companies and how it is administered by the processor. In doing so, the processor bases itself on the assessment framework set out in Section 2.4.1 of the [Guidance on the use of minimum standard].

5.2.4 Incineration as a form of disposal

Incineration meets the minimum standard for non-recyclable gypsum, but no suitable processing. Plaster is not flammable. In addition, the incineration of gypsum-containing waste has an adverse effect, as the sulphur must be separated from the flue-gases and the leaching of sulphate from the bottom ash.

5.2.5 Landfilling

Gypsum is subject to a dumping ban pursuant to category 35 of Article 1(1) of the Landfills and Waste Dumping Prohibitions Decree(Bssa). For non-recyclable gypsum, the competent authority may grant an exemption from this dumping ban if the recyclers have declared that recycling is not possible. For more information, see the [Guidance on dumping ban exemption].

In addition, landfilling is also associated with the transfer of gypsum waste that is not a EU fertilising product or has no fertilising value, or if it is contrary to the Decree on the use of fertilisers or to §4.116 of the Bal.

More information on the dumping bans can be found in [Preparing and implementing a dumping ban chapter].

5.3Substances of very high concern (SVHCs)

For gypsum, no SVHCs have been detected[33] that may occur in concentrations above the concentration limit (cgw) indicated in [Table 1] of ‘Chapter SVHCs and other substances of concern’. This is a snapshot of the available knowledge. New information may become available

33Source: SGS Intron, 2019, SVHC in waste.

at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

6. Other information

6.1Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term ‘waste’ should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

For gypsum, here is a number of specific points for attention when assessing waste or non-waste. These points do not describe the full assessment framework.

By-product

In the manufacture of gypsum products, residual materials are released. As long as this material complies with all Substance and Product legislation and technical requirements, the material can be re-used for the production of gypsum products. The assessment of whether a material is a waste or a by-product will require a case-by-case assessment based on all the facts and circumstances of the particular case and on the conditions set out in Article 1.1(4) of the Environmental Management Act.

End-of-waste

Gypsum plasterboards or gypsum blocks released during demolition operations are almost always waste. It is only if, when the holder requests demolition, it is already known where the gypsum boards or gypsum blocks are to be used again and the gypsum boards or gypsum blocks do not need to undergo any further processing, that the waste may not be present. The end-of-life stage can be used to assess the possibility of re-using gypsum boards or gypsum blocks. Ideally, this assessment should be done as early as possible, before scrapping. If it is clear that the gypsum boards or gypsum blocks can still be reused or recycled, the process will be demolished more carefully. If this step is not taken by the demolition waste collector, the construction and demolition waste collector may also carry out this assessment. After preparation for reuse or recycling has been completed, the conditions set out in Article 1.1(6) Environmental Management Act(WM) and [Chapter on waste or non-waste] allow an assessment of whether end-of-waste exists, based on all the facts and circumstances of the case.

Non-waste on the market

In all cases, gypsum is to be placed on the market as a non-waste (either directly or after recovery or not) and has to comply with the relevant product legislation as a minimum. These include REACH, the POP Regulation and the requirements following

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from the Commodities Act. The requirements of the Living Environment Law (Activities) Decreeand the Soil Quality Decree should also be considered for the use of gypsum as a building material.

6.2Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to ‘potentially recoverable critical materials’.

Gypsum is not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report ‘Recovery potential secondary critical raw materials based on waste plans in the LAP3’ (TNO, 2023).

[Section 2.3.6 ‘Critical materials and high dignity’] of the CMP’s ‘Recycling of waste’ chapter provides more information on critical materials in relation to waste treatment.

6.3BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

6.4Mention of source

For this part of the CMP, the following documents have been used:

- Tauw ‘Interventions to encourage the marketing of recycling streams’ dated 26 August 2020
- RoyalHaskoning DHV (2022a). *Concretizing conditions that prevent recycling as aminimum standard.*
- RoyalHaskoning DHV (2022b). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.
- IPR Normag (2023). [*Fact-finding study on Recycle Tariff – A study on 32 waste streams: Market forces, costs and revenues and transfer to the CMP*].

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

No developments are currently foreseen that could lead to changes in the assessment frameworks of this waste plan.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Glass waste plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading 'Assessment frameworks'.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a 'content' or 'bookmarks' in the browser or the PDF reader's left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section 'Tools'.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can't read the text or images? Contact 088-7977102 or the helpdesk's contact form.

Status: Circular Materials Plan draft for public consultation

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Website: circulaire materials plan.nl

Home > Materials > Glass waste plan

Glass waste plan

This waste plan provides the assessment framework that competent authorities should take into account when granting permits for waste treatment and cross-border glass transports.

Synopsis

The first part of this plan contains the assessment frameworks for the authorisation of the processing and cross-border transport of glass. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Assessment frameworks

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2. Process quality assessment framework
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   - 6.6. Mention of the source

Future plans

Assessment frameworks

This section of the plan describes how companies should process glass, including the focus points. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	**Explanatory Note**
Separately collected flat glass or separately delivered flat glass	Flat glass is mainly waste-free in residential and non-residential buildings and in demolition and renovation works. Flat glass is collected separately at the collection point.
Container glass collected separately	Separately collected glass packaging that can be typed as an agglomerate, scraper or scraper.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below address the following aspects that are relevant for the authorisation of the processing of glass:

- mixing permission (2.1)
- minimum standard (2.2)

2.1Mixing of waste

Mixing is designated in the Environmental activities decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements. The [Mixing permit requirement decision tree] a tool to check whether the mixing operation requires a permit.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories. The table below clarifies which wastes fall under which waste category.

N°	**GA/NGA***	**Bal waste category**	**Wastes covered**
34	Nga	Container glass	Glass packaging such as jars and bottles. It does not include other glass objects such as wine glasses, oven dishes or decorative objects.

35	Nga	Flat glass that is not a hazardous waste material	Flat glass is a collective name for several types of glass used in the construction of a dwelling and utility. This includes the following types of glass: plain float glass, wired glass, figurative glass, coated glass, toughened glass, laminated glass, fire-resistant glass, coloured single glass, insulating glass, horticultural glass, silvered glass, enamelled/painted glass, profile glass, glass blocks, curved glass, other flat glass and combination glass to the extent that it is not a hazardous waste material.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 ‘Keeping waste separate’].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

This plan does not contain any specific provisions for glass that the competent authority should take into account in derogation from the general assessment frameworks.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP’s assessment frameworks for allowing the mixing of glass.

2.2 Minimum standard

Glass processing must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the processing of glass:

Part strom	**Waste**	**Minimum standard**
a	Separately collected or separately delivered flat glass	Recycling of the entire glass fraction.
b	Container glass collected separately	Recycling of the glass fraction and processing of the sorting residue according to the provisions from [Waste plan residues].

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 ‘Explanation of the minimum standard’].

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether the transfer of glass is permitted. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this

is indicated by ‘nEVOA’. In other cases, only the ‘WSR’ appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term ‘degree of recovery’ is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase ‘any landfilling or other disposal’. Again, it is the waste after non-material waste has been separated.

Relation with other waste plans

For the sub-streams in this waste plan where other waste plans are referred to for processing, no assessment framework for the transfer is included in this section. This applies to the sorting residue generated when processing container glass.

Scope of the assessment framework, grounds and conditions for objection

The following assessment framework applies to all glass sub-streams as specified in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. ‘prohibitions’] of the ‘cross-border transport’ section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to ‘transfer for recovery’ (Article 12 EVOA). The second table contains the grounds for objection related to ‘transfer for disposal’ (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	**Specific provisions and grounds for objection**
Preparing for reuse	If the degree of recovery does not justify the shipment. For container glass and flat glass, any landfilling is too high (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR)).
(Interim recovery followed by) recycling	If the degree of recovery does not justify the shipment. This is the case when the recycling rate is lower than that used for the processing of container glass and flat glass in The Netherlands. In addition, any landfilling is too high (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR)).
Other recovery	Due to the possibility of higher quality processing in the form of recycling (objection ground Article 12(1)(a), (b) and/or (n) EVOA) (Article 12(1)(a)) and in case of transfer to The Netherlands Article 12(1)(k) EVOA).

Delete for which the movement is *not* allowed	**Specific provisions and grounds for objection**
All forms of (preliminary) disposal except landfilling	Because higher-quality processing in the form of recycling is possible (the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).

Landfill	This is because higher-quality processing in the form of recycling is possible; and • national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. [Section 6.1 'Waste or non-waste'] provides specific information on this.

4. Explanatory notes on the scope

In the case of flat glass, only separately collected flat glass or separately stored and delivered flat glass is covered by this waste plan. Rules apply for keeping flat glass separate (see [section 5.1.1 'Keeping waste separate']). This includes glass in complete frames (with glass and already) dismantled. The flat glass that is not delivered in isolation generally ends up in (residual) fractions of construction and demolition waste. For the processing of mixed construction and demolition waste, see the [Waste plan mixed construction and demolition waste].

Container glass (also called hollow glass) mostly consists of glass jars and bottles. Container glass also includes small bottles and jars such as medicine bottles, perfuming bottles, cream jars and pots containing herbs or baby foods. It does not include glass items such as drinking glasses, vases or oven dishes. Only container glass obtained via separation at the source (the container or collected separately from businesses) is covered by this waste plan.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Mixed construction and demolition waste as well as mixed sorting fractions from the processing of construction and demolition waste, comparable commercial waste, comparable residual household waste in composition and mixed (unsorted) domestic waste generated from private individuals	[Waste plan mixed construction and demolition waste]
Flat glass that is not delivered separately	[Waste plan mixed construction and demolition waste]
Container glass with residual hazardous substances such as pesticides, laboratory chemicals or other hazardous substances (other than paint, glue, kit or resin)	[Packaging waste plan]
Container glass not collected via source separation	[Residual waste plan]
Glass other than packaging and flat glass (e.g. ceramic glass, car windows and hollow glass).	Processing according to the [waste hierarchy] as described in section 'guidance tools'.
Glass with electronic components such as glass with built-in electric operable blinds and mirrors with built-in LED lights covered by Directive 2012/19/EU (WEEE Directive)	[Waste plan for electrical and electronic equipment]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 150107; 170202; 170204*; 200102.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for allowing the mixing of [waste]. In the case of 'mixing', this is described in [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep glass separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	At construction and demolition sites, *flat glass*, with or without frame, is subject to a legal requirement to keep it separate and separate discharges from the release of 1 m^3 of flat glass when actually carrying out construction and demolition works on construction works *(Art. 7.24, 7.25 and 7.26 Environmental Structures Decree)*.
Keeping company waste and hazardous waste separate *(general)*	With some exceptions, see the Bal (*Article*). *3.185*), companies must always keep container glass and flat glass separate (including within a waste category) and separate disposal (*Art. 3.195 and art. 3.196 Bal and 'mixing of waste'* chapter), unless mixing permit is granted. If a company stores larger quantities of flat glass or container glass, it must also keep these wastes separate within the relevant waste categories by type, unless a mixing permit has been granted (*Article*). *3.195 and art. 3.196 Bal and 'mixing of waste'* chapter). The storage quantities are indicated for both flat glass and packaging in Art. 3.185 Bal. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(before collection or delivery)*	The following rules apply only to 'disposers' before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Businesses must keep *container glass* separate and dispose of it separately if required by the CMP *(Article) 3.39 Bal)*. In [keep company waste and hazardous waste separate] it is indicated when this is the case. In other cases, mixing with other waste that also does not need to be kept separate is allowed. A company that still wants to mix *container glass* that it must keep separate with other waste needs a permit. [Waste mixing chapter] of the CMP and [Section 2.1] of this waste plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.

Keeping separate during collection	Collectors must always keep both *flat glass* and *container glass*, delivered separately, separate by waste category *(Art. 1b. Waste Collection Decree)*.
Recycling centre (Bulky household) waste)	Flat glass is one of the 18 wastes for which the waste collection point must have a storage facility or indicate to individuals where it is possible to turn down the waste collection point if it is not collected by the waste collection point itself *(Article*). *4.623 Bal).* For *flat glass*, the competent authority may issue a specific requirement authorising the collection point not to have a separate collection facility, but to store it as a smart mixture. Conditions include that it is impossible to have a separate facility for all 18 wastes and that the same level of waste separation is achieved through post-separation or other measures. In any case, *flat glass* must not be mixed with the residual container. See [chapter on separate collection of household waste]. However, for flat glass, this alternative does not offer solace, as flat glass is not suitable to be separated from, for example, mixed construction and demolition waste. Separation at the source is therefore the only option for flat glass to achieve recycling from glass to glass.
Municipal collection *(household waste)*	Municipalities are obliged to collect *glass*[34]separately from households. For glass, although separate collection is mandatory, exceptions are possible if it does not adversely affect the quality and quantity of recycling or reuse (Article 10(3)(a) WFD). [Chapter on separate collection of household waste] details the obligations of municipalities.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority. Always check with all assessment frameworks in the chapter whether they apply to the mixing of glass.

Separate collection and processing routes for flat glass and container glass

Separate collection systems exist for container glass and flat glass. Flat glass is of better quality than container glass. For example, there are fewer bubbles in it. Collected flat glass is sorted and impurities are removed. The flat glass is then upgraded according to the quality requirements of the glass industry customer. Depending on the quality of the collected flat glass, the flat glass is recycled into e.g. flat glass, container glass or insulation material. Conversely, the quality of container glass will not be sufficient for recycling to form flat glass. The collected glass will be specified before being added to a production process.

For this reason, the competent authority cannot grant a permit for mixing container glass (waste category 34), flat glass (waste category 35) and other glass.

The importance of separation at the source

Separation at the source of flat glass is very important for the possibility of recycling flat glass into new glass products. If flat glass is added to other construction and demolition waste, it is almost impossible to separate the (broken) glass out of the mixed stream of construction and demolition waste.

For flat glass, the Stichting Platglas Recycling Nederlandorganises the separate collection of flat glass. The Foundation uses regular collection points and regional transhipment stations where smaller quantities of flat glass and loose glass can be left free of charge, as well as storage and transhipment points for the deposit of container loads and large quantities of flat glass.

34Article 1(e) of the Decree on separate collection of household waste(GIHA) includes the provision for separate collection of 'glass'. It is not specified whether the container glass or flat glass is involved. The GIHA's explanatory memorandumstates that this Decision does not contain any new obligations to promote selective demolition or to set up sorting systems for construction and demolition waste. The separation and separate disposal of flat glass is already regulated by existing law (Living Environment Law (Structures) Decree). The term 'glass' therefore refers in this case to container glass in particular.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	**Summary**
Reuse (as a form of prevention)	Reuse does not imply waste treatment. [Section 6.1 'Waste or non-waste'] describes the possibilities for re-use if known.
Preparing for reuse	Preparation for reuse (within the meaning of the definition of 'preparation for reuse') of flat glass and container glass is permitted on the basis of the minimum standard.
Recycling	Recycling is the minimum standard for both flat glass and container glass.
Other recovery	Other recovery of flat glass and container glass is not permitted as recycling is possible.
Incineration as a form of disposal	The burning of flat glass and container glass is not permitted.
Landfill	The dumping ban applies to both flat glass and container glass.

5.2.1 Preparing for reuse

Preparation for reuse of flat glass and container glass is permitted on the basis of the minimum standard. Flat glass is not usually reused, but recycled. However, preparation for the reuse of flat glass is technically possible. For example, through the renovation of coatings on insulating double-glazed units. For container glass, preparation for reuse has long been common and common practice via, for example, a deposit system.

5.2.2 Recycling

For both flat glass and container glass, the minimum standard is 'recycling' of the glass fraction. Both types of glass have their own recycling route, which is described below.

Flat glass

The minimum standard for the processing of flat glass is the recycling of the entire glass fraction. Thus, only a small amount of contamination (residue made up of kittens etc.) can be treated differently than recycling.

In order to ensure the best possible recycling, separation at the source of off-surface glass is required as far as possible. Consequently, flat glass should already be kept separate during building renovation and demolition. If no separation at the source occurs, no large portions are to be expected due to glass brittleness when it enters the reading band after the initial operations of fully collected waste from building and slotting materials. These small particles then end up in the rubble fraction. Flat glass, which is therefore not kept separate and delivered, generally ends up in the (residual) fractions of construction and demolition waste. Recycling is still considered here, but no longer in the form of flat glass.

The general processing method for separately collected flat glass from residential and non-residential buildings consists of sorting and separating contaminants. The separation of flat glass from the construction and demolition waste is only possible with pre-sorting. The sorting of the separately collected flat glass is done on different aspects:

- The quality and material characteristics associated with the different applications of flat glass have been used, e.g. single and laminated glass, wired glass, mirrors and fire resistant glass;
- colour;
- the level of contamination.

Due to the fact that glass is hard and smooth, it is easy to clean on its own. If lots of flat glass are contaminated with, for example, glass with built-in electronics, heat-resistant glass or KSP (ceramics, stone and porcelain), this can cause significant problems in recycling. Occasionally, contaminants may be such that the separately collected flat glass is not suitable for recycling. Pollution from ceramic hobs can prevent the entire load from being recycled even at very low levels. Small impurities, such as kittens that are left behind, blend with the glass material when processed (melt), resulting in a lower quality raw material. This can then no longer be processed in the flat glass industry, but only in the container glass or glass wool industry.

Container glass

Recycling is also the default method for container glass. The Packaging Management Decreesets a combined target for the recycling and reuse of glass in packaging. Container glass is collected mainly via glass containers at specific locations in the municipalities. After collection, container glass is cleaned from food waste (cleaning) and non-glass fractions (such as metal, plastic, stony material) are separated. The glass fraction is reprocessed and applied by glass factories. The processing of glass may generate the residual flow of glass dust. Fine glass dust can be applied in the brick industry as an additive.

Sorting residue from container glass processing

Container glass manufacturers use glass waste and apply strict raw material specifications. In sorting waste glass to highly pure streams, some glass may be lost as a sorting residue. Sorting residue is the fraction remaining after the separation of all mentioned sub-fractions in such a way that it leaves a fraction which no longer contains materials suitable for recycling. What ‘is no longer suitable for’ is not to be described with criteria and is at the discretion of the Authority. For the processing of the sorting residue, see the [Residue waste plan].

5.2.3 Other recovery

Not allowed for flat glass and container glass as recycling is possible.

5.2.4 Incineration as a form of disposal

Not allowed for flat glass and container glass as recycling is possible.

5.2.5 Landfilling

A dumping ban is based on theLandfills and Waste Dumping Prohibitions Decree(Bssa), Article 1(1), Category 41 (flat glass) and Category 43a (packaging waste). More information on the dumping bans can be found in [Preparing and implementing a dumping ban chapter].

5.3Substances of very high concern (SVHCs)

No SVHCs have been detected for container glass and flat glass[35] that could be present in concentrations above the concentration limit (cgw) indicated in [Table 1] of chapter ‘SVHCs and other substances of concern’. This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

6. Other information

6.1Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit

35Source: SGS Intron, 2019, SVHC in waste.

related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term ‘waste’ should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to carry out this assessment itself can be found in [chapter waste or non-waste] of the CMP and theGuide waste or non-waste.

For glass, here is a number of specific points for attention in the assessment of waste or non-waste. These points do not describe the full assessment framework.

Reuse

In order to determine whether there is reuse or waste, it is important to establish the holder’s intention with the glass. If a holder discards, wants to discard or needs to discard the glass, it is a waste. If the holder wishes to resell the glass, this may be an indication that the glass is not waste but is reused. There are more factors that will determine whether this reuse is possible or desirable. For example, the suitability of the glass products for reuse needs to be assessed. In addition, there must be a high degree of certainty that these glass products can be sold again. The assessment of whether a material is waste or non-waste will require a case-by-case assessment of the waste status of the material, based on all the facts and circumstances of that case.

Glass cullet (end-of-waste Regulation)

For certain types of glass, the EuropeanRegulation (EU) No 1179/2012applies. This Regulation lays down criteria for determining when glass cullet destined for the production of glass substances and objects in re-melting processes ceases to be waste. Glass cullet obtained by recovering glass waste is defined as glass cullet. All glass meeting the requirements of Section 2 of Annex I falls within the scope of this Regulation. It follows that only waste from the collection of recoverable container glass, flat glass or lead-free table glass may be used as input. The collected waste glass may contain untargeted small amounts of other glass types. This Regulation is the only
assessment tool to determine whether glass, within the scope of the Regulation, is waste or non-waste. Assessments of the waste status of the glass cullet on other grounds are not permitted.

Non-waste on the market

In all cases, when glass is placed on the market as non-waste (either directly or after recovery or not), it must comply as a minimum with the applicable product regulations. These include REACH, the POP Regulation and the requirements arising from the Commodities Act.

6.2Collection and Extended Producer Responsibility (EPR)

Packaging is subject to an Extended Producer Responsibility (EPR), which also includes, or may include, provisions on the collection or intake of packaging.

Producers (including importers) are responsible for the collection or collection and treatment of packaging when it is discarded, for recycling as materials and for financing these operations. The Packaging Waste Fund collectively implements these obligations on behalf of all producers and importers. The collection of container glass mainly takes place via glass containers in specific locations in the municipalities.

There is also a EPR scheme for flat glass. EPR schemes aim to ensure that the person placing certain substances, mixtures or products on the market bears, in whole or in part, the financial or organisational responsibility for waste management of those substances, mixtures or products. Important aspects of this waste management are: the level and method of collection and the treatment of the waste. An EPR scheme may take the form of a decision to make a generally binding declaration of a waste management contribution agreement without the adoption of a ministerial or a decision. For flat glass, a request for a generally binding declaration of a waste management fee agreement has been made by the producers and has been declared generally binding by the Minister until 31 December 2027. More information on RPV can be found on the ‘Producer Responsibility’ page of Waste Circular.

6.3 Generally binding declaration (AVV)

Producers and importers importing or placing a specific product on the market may request that the Minister declares a contract for the payment of a waste management fee to be generally binding (AVV). This tool can be used by producers and importers to finance producer responsibility initiatives (voluntary or otherwise). The container glass system implements the legal obligations. The system for flat glass is voluntary. The current AVV's for packaging and flat glass runs until 31/12/2027. They may be extended, but this is not certain.

6.4 Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to 'potentially recoverable critical materials'.

Glass is not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report 'Recovery potential secondary critical raw materials based on waste plans in the LAP3' (TNO, 2023).

[Section 2.3.6 'Critical materials and high dignity'] of the CMP's 'Recycling of waste' chapter provides more information on critical materials in relation to waste treatment.

6.5 BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

6.6 References to sources

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

The Ministry of the Interior and Kingdom Relations (BZK) aims to promote circular demolition and more reuse and/or high-quality recycling of construction materials. This includes examination of how to introduce a requirement (standardisation) for circular demolition in building regulations as part of the integrated environmental performance for buildings (Measures sheets for IBO-climate, Annex 3, factsheet 2.7). The expected effect of this is that flat glass will be reused more often and recycled at a higher quality in the future. This is in accordance with the current minimum standard. The minimum standard does not currently distinguish between different forms of recycling for flat glass. There are no plans to change the minimum standard.

Container glass is covered by the 2014 Packaging Management Decree. This Decision sets a combined target for the recycling and reuse of glass packaging. This standard focuses on recycling as well as reuse and does not prioritise. It is up to manufacturers and importers to decide which route – reuse or recycling – is the most optimal. Preparing for reuse is, where possible, of higher quality than recycling because there is little material loss during (preparing for) reuse. Preparation for reuse is permitted on the basis of the minimum standard. There are no plans to change the minimum standard.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Plastics waste plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading 'Assessment frameworks'.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a 'content' or 'bookmarks' in the browser or the PDF reader's left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section 'Tools'.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can't read the text or images? Contact 088-7977102 or the helpdesk's contact form.

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Website: circulaire materials plan.nl

Home > Materials > Plastics waste plan

Plastics waste plan

This waste plan provides the assessment framework that competent authorities should take into account when granting permits for waste treatment and cross-border transport of plastics.

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of [waste]. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Future plans

Assessment frameworks

This section of the plan describes how businesses should process plastic and the focus points. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
Plastic waste resulting from the production and processing of plastics or plastic products (production waste)	Plastic waste concerns: • plastics of fossil origin, as well as plastics of biological origin, both if non-biodegradable; • thermoplastics, thermosets (including composites with thermosetting resin); • mixtures of the above.
Separately collected plastic waste	Separately collected plastic waste both from land and water. These substances are the same as those mentioned above. Rubber can also be present in mixed fractions.
Plastic waste resulting from demolition, dismantling, separation and sorting activities	These substances are the same as those mentioned above. Rubber can also be present in mixed fractions.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below address the following aspects that are relevant for authorising the processing of plastics:

- mixing permission (2.1)
- minimum standard (2.2)

2.1 Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check if mixing requires a permit

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered

22	Nga	Mixed plastic waste, including mixtures of plastics and rubber, or batches of thermoplastics that are not hazardous waste, except for: • batches consisting solely or mainly of expanded polystyrene foam (category 31), • batches consisting solely or mainly of rubber (category 112); • plastic waste classified as hazardous waste due to the presence of plasticisers, certain pigments or other additives (category 112); • thermosetting waste, elastomers and biodegradable plastics (category 112).	This category includes mixed fractions of different types of plastics as well as (sorted) thermoplastics fractions.
112B	Nga	Other non-hazardous waste that may not be dumped pursuant to the Landfills and Waste Dumping Prohibitions Decree [Besluit stortplaatsen en stortverboden afvalstoffen] or a minimum standard in circular Materials Plan	Thermosets; and fractions of mixed plastics and thermoplastics for which it has been demonstrated that sorting is not technically possible or for which the recycling route at the gate of the processor would cost the disposer more than 265 euros/tonne (see minimum standard).

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 ‘Keeping waste separate’].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

This plan contains the following specific provisions for plastics that the AACC should take into account, in derogation from the general assessment frameworks:

Cat. Bal	Allowing mixing in relation to the waste categories
22	By way of derogation from the [Waste Mixing Chapter], the competent authority can only authorise the mixing of thermoplastics and mixed plastic waste within waste category 22 if that waste is sorted or otherwise processed with:
	separation of thermoplastics, thermosets and elastomers for further processing according to minimum standards.
112B	By way of derogation from the [Waste Mixing Chapter], the Authority can only authorise the mixing of thermosetting plastics, non-recyclable thermoplastic plastics and non-recyclable mixed plastics with each other or with other wastes within waste category 112B if: the thermoplastic and mixed plastics are used after mixing with the use of the energy content or are recycled; and the thermoset plastics are recovered.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of plastics.

2.2Minimum standard

Plastic processing must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority may only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs]. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the processing of plastic waste:

Component flow	Waste	Minimum standard
a	Mixed plastic (excluding artificial grass)	Sorting or other processing with the purpose of separating thermoplastics, thermosets and elastomers for further processing according to the respective minimum standards described in this table or the [Waste plan tyres and other rubber].
b	Mixed plastic, including residues from the sorting of mixed plastic, for which a processing is not technically possible due to its nature or composition or - for the sake of duration, the costs of handing over these batches by the disposer at the gate of the processor would exceed 265 euros/tonne.	Primary use as fuel (as a form of recovery)
c	Thermoplastics	Recycling.
d	Thermoplastic material for which the recycling route, due to its nature or composition, is so expensive that the costs of handing over these batches by the disposer at the gate of the processor would exceed 265 euros/tonne.	Primary use as fuel (as a form of recovery)
e	Thermosetting plastics	Other recovery, including primary use as fuel

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 'Explanation of the minimum standard'].

Wastes containing certain SVHCs

SVHCs may be present in the waste. Both the legislation described and the assessment frameworks of [Chapter mengen van afvalstoffen] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing the authorisation of plastic transfers. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation(EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [Section 5.3 'SVHCs and other substances of concern'] of this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Scope of the assessment framework, grounds and conditions for objection

The assessment framework below applies to all plastic component streams as specified in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless the EVOA check leads directly to an objection, see [section 3.3.1 prohibitions] of the cross-border transport section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Explanation and grounds for objection
Preparing for reuse or (preliminary recovery and subsequent) recycling	If the degree of recovery does not justify the shipment. For plastic waste, any landfilling or other disposal is too high (grounds for objection 12(1)(b) and (i) EVOA (Article 12(1)(g) EVOA)).
Other recovery for component flows (a) and (b)	Because minimum thermoplastics can be recycled after sorting, unless: • the notification shows that recycling is not possible due to the nature or composition of the waste; or • that the cost of recycling exceeds EUR 265 per tonne and, • some of the shipped waste will not be landfilled or otherwise disposed of. (ground for objection Article 12(1)(a), (b) and/or (e) and (i) of the EWSR (Article 12(1)(a) and (g) for shipments to the Netherlands Article 12(1)(k) of the EWSR)).
Other recovery for component flows c and d	This is because higher-quality processing in the form of recycling is possible unless: • the notification shows that the cost of recycling exceeds EUR 265.- per tonne; and • some of the shipped waste will not be landfilled or otherwise disposed of. (ground for objection Article 12(1)(a), (b) and/or (e) and (i) of the EWSR (Article 12(1)(a) and (g) for shipments to the Netherlands Article 12(1)(k) of the EWSR)).
Other recovery for component stream e	If the degree of recovery does not justify the shipment. For thermoset plastics, any landfilling or other disposal is too high (grounds for objection 12(1)(b) and (i) EVOA (Article 12(1)(g) EVOA)).

Disposal for which the shipment is *not* authorised	Explanation and grounds for objection
Forms of (preliminary) disposal other than dumping	This is because higher-quality processing in the form of recovery is possible (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
Landfill	This is due to the higher quality of the processing in the form of recovery, and • under national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. Specific information is provided in [Section 6 ‘Waste or non-waste’].

4. Explanatory notes on the scope

This plan covers only plastic waste. Both mixed and sorted plastics are subject to the provisions of this plan. This waste plan concerns only mixed plastic and/or plastic rubber fractions (excluding artificial grass), thermoplastics and thermosets.

Please note that [for input on the draft CMP]: the scope of Sector Plan 11 in the LAP3 ‘Plastics and rubber’ was broader than the scope of this Waste Plan. Rubber kept separate (elastomers) or rubber separated from a mixed fraction are covered by the CMP under a different waste plan [Tyres and rubber waste plan].

In addition to ‘fossil’ plastics, some bioplastics are also included in the scope of this plan. These are bioplastics that can be processed together with fossil plastics. OXO-plastics and microplastics are not included in the scope of this plan for the time being. Each of these plastics is addressed by the information box below.

Types of plastics and relation to this waste plan

Biobased plastics, biodegradable, biodegradable, compostable

There are several types of bioplastics. Depending on the type of ‘bioplastics’, they may or may not fall within the scope of this waste plan. Therefore, they are explained below and whether or not they are covered by this waste plan. It follows the Communication from the European Commission and the EU Parliament (Policy framework for bio-based plastics (europa.eu)).

Biobased: these are plastics whose exact and measurable share of biobased plastics in the product is specified, so that consumers know how much biomass was actually used in the product. In addition, the biomass used must be sustainably sourced without adverse effects on the environment. Biobased plastic is included in the scope of this waste plan.

Biodegradable: in the case of products labelled ‘biodegradable’, it should be made clear that, despite this indication, they cannot simply be discarded (e.g. on compost heap) and it should be specified how long the product needs to biodegrade, under what conditions and in what environment (e.g. soil, water, etc.). Products that are likely to become waste, including those covered by the Single-Use Plastics Directive, cannot be labelled as biodegradable. Biodegradable plastic is not included in the scope of this waste plan.

Compostable: below, only industrially compostable plastics meeting the relevant standards may be labelled. Industrially compostable packaging must indicate how the items are to be disposed of. Compostable plastics are not included in the scope of this plan.

OXO-degradable plastics

The oxo-degradable plastics are fossil plastics that, by adding starch compounds, degrade into microplastics and thus can cause problems in recycling and the environment. Oxo’s are not included in this waste plan.

Microplastics

These wastes are currently not covered by this Waste Plan. Microplastics are a major concern in the international arena. This may lead to policy changes and thus to the amendment of this waste plan at a later stage.

Microplastics are released during the production, use and processing of plastic products. This could include, for example, agricultural plastic coming under the ground during construction, but which could injure up during the life stage and tear it apart. A whitepaper developed by TNO: Why fewer microplastics are needed and achievableshows the sources of microplastics. The other plastic products and agriculture most of which are covered by this waste plan are both substantial sources. RIVM is developing a knowledge agenda: 2022-0188.pdf (rivm.nl)around microplastics showing also agricultural plastics as a potential source. There is also an EU policy in the form of a restriction proposal for microplastics under the REACH Regulation and a proposal for a policy package to address microplastic pollution.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Plastic waste not separately collected or not post-separated in residual household waste	[Residual waste plan]
Biodegradable plastic	[Biowaste waste plan] in so far as it is bags used in VGF collection; or Processing according to the [waste hierarchy] as described in section 'guidance tools'.
OXO-degradable plastics	Processing according to the [waste hierarchy] as described in section 'guidance tools'.
Plastic insulated cables	[Waste plan for cables and scrap]
Plastic as part of shredder waste (not yet sorted)	[Shredder waste waste plan]
Mixed sorting fractions produced by the processing of construction and demolition waste, commercial waste with a similar composition, household waste with a similar composition and domestic renovation waste (unsorted) generated by private individuals	[Waste plan mixed construction and demolition waste]
Beverage cartons	[Packaging waste plan]
Plastic packaging, including fractions from sorting	[Packaging waste plan]
Artificial grass (which consists of various components of different types).	[Artificial grass supply chain plan]
EPS, either source-segregated or post-segregated	[EPS Styrofoam waste plan]
Microplastics	Processing according to the [waste hierarchy] as described in section 'guidance tools'
Plastics as part of composite products	Respective waste plans (e.g. [Waste plan electric/electronic equipment]) or Processing according to the [waste hierarchy] as described in section 'guidance tools'

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 020104; 070213; 120105; 150102; 160119; 170203; 170204*; 191204; 200139.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for the permit mixing of [waste]. In the case of ‘mixing’, this is described in [Section 4.1 ‘Definition of mixing’] of the ‘waste mixing’ chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep plastic waste separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that ‘mixing’ is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	At construction and demolition sites of construction works, there is *no* legal obligation to keep waste plastics separate and disposed of separately, which is released during the actual performance of construction and demolition works on construction works *(Art. 7.24, 7.25 and 7.26 Environmental Structures Decree)*.
Keeping industrial waste and hazardous waste separate *(general)*	Businesses must keep plastic waste separate and dispose of it separately from other waste, unless they have a mixing permit (*Art.*). *3.195 and art. 3.196 Bal and ‘mixing of waste’* chapter). Subject to some exceptions, the company must also keep plastic waste separate from other plastic waste of the same category and from non-waste, unless a mixing permit has been granted (*Art.*). *3.195 and art. 3.196 Bal and ‘mixing of waste’* chapter). These exceptions are set out in Article 3.185 Bal. [Waste mixing chapter] of the CMP and [Section 2.1 ‘Mixing permission’] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to ‘disposers’ before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Businesses should keep plastic waste separate and dispose of it separately if required by the CMP *(Art. 3.39 Bal)*. The [Section on keeping corporate and hazardous waste separate] specifies when this is the case. In other cases, mixing with other waste that also does not need to be kept separate is allowed. A company that wants to mix plastic waste that it has to keep separate with other waste will need a permit to do so. The ‘Mixing of waste’ section of the CMP and [Section 2.1] of this plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep plastic waste that is disposed of separately separated by waste category *(Art.) 1b. Waste Collection Decree)*.
Recycling centre *(bulky household waste)*	Hard plastics are one of the 18 wastes for which a waste collection point must have a storage facility or make it known to individuals when it does not take up the waste itself *(Article*). *4.623 Bal).* For hard plastics, the competent authority may issue a specific requirement to allow the collection site not to have a separate collection facility, but to store it as a smart mixture. Conditions include that it is impossible to have a separate facility for all 18 wastes and that the same level of waste separation is achieved through post-separation or other measures. in any case, [waste] must not be mixed with the residual container. See [chapter on separate collection of household waste]. [Chapter on separate collection of household waste] specifically addresses separation at the collection point.
Municipal collection *(household waste)*	Municipalities are required to collect plastic waste separately from households. [Chapter on separate collection of household waste] details the obligations of municipalities.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of ‘mixing’. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.2 ‘Mixing of hazardous waste’]
- [Section 4.2.4 ‘Mixing of POP-containing waste’] and/or [Section 4.2.3 ‘Mixing of waste containing PBT or vPvB substances or substances of ‘equivalent care’]

Always check whether the chapter is applicable to the mixing of plastics for all review frameworks.

The essence of allowing the mixing of plastics is that processing in accordance with the minimum standard should remain possible after mixing. In the case of plastics, this means that:

- By way of derogation from the [Waste Mixing Chapter], the competent authority can only authorise the mixing of thermoplastics and mixed plastic waste within waste category 22 if these wastes are sorted or otherwise processed with the purpose of separating thermoplastics, thermosets and elastomers for further processing according to the minimum standards. Recycling should remain possible after mixing thermoplastics. Thermosets and elastomers are to be usefully applied after mixing.
- By way of derogation from the [Waste Mixing Chapter], the competent authority may only authorise the mixing of thermoplastic and mixed plastic waste with each other or with other waste within waste category 112B if the plastics are disposed of for main use as fuel (as a form of recovery) and the company has demonstrated prior to mixing that:
  - sorting mixed plastic, including residues from the sorting of mixed plastic; and
  - recycling of thermoplastics; because of its nature or composition, it is not technically possible or if this processing route is so expensive that the costs of disposing of these batches by the disposer at the gate of the processor would exceed 265 euros/tonne.
- By way of derogation from the [Mixing of waste materials chapter], the competent authority can only authorise the mixing of thermosetting plastics with other waste within waste category 112B if these waste materials are subsequently recovered.

The competent authority must attach control instructions to the permit for mixing plastic waste to ensure that it is processed in accordance with the minimum standard.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Reuse does not imply waste treatment. [Section 6.1 ‘Waste or non-waste’] describes the possibilities for re-use if known.
Preparing forre-use	Complies with the minimum standard.
Recycling	Recycling is required for thermoplastics (minimum standard). Thermosets may be recycled on the basis of the minimum standard, but this is not yet mandatory.
Other usefulapplication	This is the minimum standard for thermosets, as recycling is not always possible. Mixed plastics and thermoplastics may also be incinerated with energy recovery under certain conditions.
Incineration as a formof disposal	This plan is not permitted for any of the wastes.
Landfill	Plastic waste is subject to a dumping ban.

5.2.1 Preparing for reuse

If preparation for reuse of plastic products is possible, this is permitted on the basis of the minimum standard. Please note that preparation for re-use is when, after a simple operation of cleaning, repairing or checking, plastic products are made suitable for their original intended use again.

5.2.2 Recycling

Recycling is possible for many plastics and therefore recycling is also the basis for the different minimum standards of this plan. This is explained for each waste type below.

An overview of plastic processing and further details on different forms of recycling can be found in theCircular Plastic Letter to the Parliamentof 3 April 2023.

Mixed flows

Mixed streams include a mixture of thermoplastics, thermosets, and sometimes elastomers (rubber). Since some of these plastics are recyclable, the minimum standard for mixed plastics is separated as far as possible into the thermoplastics, thermosets and elastomers[36]. An exception is possible in case the filtering out is not technically possible or is too costly. See [Section 5.2.3 'Other recovery'].

Thermoplastics

A thermoplastic melts when heated. The advantage is that it is easy to reprocess into a mould for reuse (mechanical recycling). Examples of thermoplastics are PE, PP, PET, ABS, PVC and PS. The minimum standard for thermoplastics is therefore recycling.

For high-quality processing, it is important to increase the quality of the recycled thermoplastic. The quality is largely determined by the purity of the sorted waste. Examples include the prevention of impurities with other plastics (disassembly of different types of plastics), impurities with other substances (e.g. food residues) or additives for the various application areas (colourants, fillers, amplifiers, plasticisers, etc.).

Only for batches of thermoplastics for which recycling has been proven to be too expensive (more than 265 €/t at the gate of the processor) is the minimum standard 'primary use as fuel'. See further [Section 5.2.3 'Other recovery'].

Thermosetting plastics

For thermosets, recycling is not mandatory, but is sometimes possible and allowed on the basis of the minimum standard. A thermostatically melts not when heated but gasifies. This makes recycling difficult. Examples are alkyd and polyester resins. One possible form of recycling is depolymerisation through chemical processes (such as chemical depolimerisation, torrefaction, hydrolysis, solvolysis, pyrolysis and gasification). The disadvantage of these techniques is that they have a relatively high energy cost and that they provide monomers and not polymers (which thus need to be done again). The advantage of these techniques is that they produce fairly pure flows that are, or almost, qualitatively similar to 'virgin' plastics. Depolymerisation is also possible for thermoplastics and elastomers.

There is also an increasing use of fibre-reinforced plastics or composite material. These are thermoset plastics reinforced with (e.g. glass) fibres. As a result, they are difficult to process into new material in the waste phase. For these fibre reinforced plastics, however, the resin and the fibre can be mechanically separated

separate, after which recycling of the fibre (e.g. as reinforcement in new products or as filler in the cement industry) is possible. Since all these techniques are not always applicable, the minimum standard is not yet set to 'recycling'.

5.2.3 Other recovery

Since not all *thermosetting plastics* can be recycled yet, the minimum standard is 'other recovery'. This means that 'primary use as fuel' for thermosets is allowed.

For *mixed plastics* and for *batches of thermoplastics*, 'other recovery' is only permitted under certain conditions:

- For mixed plastic fractions – including residues from sorting of mixed plastic – sorting out, due to its nature or composition, is not technically possible or if sorting is more expensive than 265 €/t at the gate of the processor.
- For thermoplastics when recycling is more expensive than 265 €/t at the gate of the processor.

36For the minimum standard for the processing of rubber (elastomers) see the [waste plan car tyres and other rubber].

Show non-recyclable

Section 2.4.1 'The minimum standard includes certain exceptions' of the [Guide to the use of minimum standard] describes how a company should demonstrate this. The costs that may be included in the calculation of the amount of 265 are described in [Section 5.3.2 'What is included in the limit of EUR 265?'] of the 'Use of the cost criterion' section. If, for the same reason, these wastes are transferred for another method of processing (to or from the Netherlands), the notification file must contain the information described in [paragraph 5.4 'Export and the limit value of EUR 265 per tonne'] of the 'Use of the cost criterion' section.

'Other recovery' facilities that such parties intend to accept waste include in the acceptance policy that they will only accept if it is demonstrated that the waste is not suitable for recycling or that recycling is more expensive than EUR 265.- per tonne. The acceptance policy should specify how this is to be demonstrated by companies and how it is administered by the processor. In doing so, the processor bases itself on the assessment framework of Section 2.4.1 'the minimum standard contains exceptions' of the [Guide to use of minimum standard].

5.2.4 Incineration as a form of disposal

Incineration (as a form of disposal) is not permitted for any of the wastes in this plan.

5.2.5 Landfilling

Dumping is not permitted for any of the waste substances included in this plan. Under the Landfills and Waste Dumping Prohibitions Decree(BSSA), Article 1, first paragraph, category 40 (plastic and rubber waste), plastic waste is subject to a dumping ban. Relevant to this waste plan is that the explanatory note to this category in the Decision states 'Examples of flows include agricultural and horticultural films, synthetic turf and plastic window frames.' More information on the dumping bans can be found in [Preparing and implementing a dumping ban chapter].

5.3Substances of very high concern (SVHCs) and other substances of concern

SVHCs in the table below are known[37] to be present in plastics in concentrations above the concentration limits in [Table 1] in the chapter 'SVHCs and other substances of concern'. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 'Legislation to phase out and restrict use'] of the 'SVHCs and other substances of concern'.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or

37Source: SGS Intron, 2019, SVHC in waste.

air. See also the webpage ‘Addressing substances of very high concern’ (IPLO) and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

Plastic packaging waste from households does not contain SVHCs above the concentration limit (CJW) in [Table 1] of chapter ‘SVHCs and other substances of concern’. This may be the case for other mixed plastic fractions and plastic waste resulting from demolition, dismantling, sorting and separation activities, as well as for batches of plastic production waste originating from a producer that specifically used a certain additive. This is a focus in the production of flakes or granules intended for the production of new plastic applications. A (non-exhaustive) list of the most commonly used substances is provided in the table below.

SVHC	Regulations	Waste and description
Tetrabromobisphenol A (TGDP-A)	REACH Candidate List	In mixed coastal dust and plastic waste resulting from demolition, dismantling, sorting and separation activities.
Phthalates such as • bis(2-ethylhexyl) phthalate (DEHP) • dibutyl phthalate (DBP) • bis(2-ethylhexyl) phthalate (DEHP) • dibutyl phthalate (DBP) • benzyl butyl phthalate (BBP) • dihexyl phthalate (DHP) • di-n-pentyl phthalate (DPP) • 1,2-benzenedicarboxylic acid, di-C711 branched and linear alkyl esters • N-pentyl-isopentylphthalate • Dicyclohexyl phthalate • N-pentyl-isopentylphthalate	• REACH Annex XIV (entry 4, 5, 6, 33, 35, 37, 38, 39, 45) • REACH Annex XVII (restriction 30, 51)	In mixed coastal dust and plastic waste resulting from demolition, dismantling, sorting and separation activities. These plasticisers were mainly used in films, cable jackets and PVC.
Lead compounds	REACH Annex XVII (restriction 30, 63)	In mixed coastal dust and plastic waste resulting from demolition, dismantling, sorting and separation activities, in particular batches of PVC or waste containing PVC.
Cadmium compounds	REACH Annex XVII (restriction 23)	In mixed coastal dust and plastic waste resulting from dismantling, dismantling, sorting and separation activities, in particular batches of PVC or waste containing PVC.
Tetraboron disodium heptaoxide hydrate	REACH Annex XVII (restriction 30)	Used as flame retardant.
Tris(2,3-dibromopropyl) phosphate (TRIS)	REACH Annex XVII (restriction 4)	Used as flame retardant.
Tris(2-chloroethyl) phosphate (TCEP)	• REACH Annex XIV (entry 13) • REACH Annex XVII (restriction 30)	Used as flame retardant.
Trixylyl phosphate (TXP)	• REACH Annex XIV (entry 47) • REACH Annex XVII (restriction 30)	Used as flame retardant.
4,4'-oxydianiline	REACH Annex XVII (restriction 28, 29)	Used as flame retardant.

Alkanes, C10-C13, chloro	POPs Regulation	Used as flame retardant.
Dechlorane Plus	REACH Candidate List	Used as flame retardant.
Zirconia Aluminosilicate Refractory Ceramic Fibres (ZrAl-RCF)	REACH Candidate List	Used as flame retardant.
Boron oxide	REACH Annex XVII (restriction 30)	In plastics as a contaminant in the production of man-made fibres.
Hexabromocyclododecane (HBCDD)	POPs Regulation	Used as a flame retardant and may occur in, among others, high-impact polystyrene (HIPS) used for electrical and electronic equipment housings.
Polychlorinated biphenyls (PCBs)	POPs Regulation	It has been applied as a flame retardant in plastics and insulation but has been banned since 1985. May occur sporadically in batches of plastic.
Polychlorinated terphenyl (PCT)	REACH Annex XVII (Restriction 1)	Used as a plasticiser, it may be present in batches of plastic from electronics.
4-tert-butylphenol	REACH Candidate List	Used as plasticiser.
Benzene-1,2,4-tricarboxylic acid 1,2anhydride (TMA)	REACH Candidate List	Used as plasticiser.
Methyl hexahydrophthalic acid anhydride (MHHPA) insulation: • hexahydrophthalic acid anhydride (cis-isomer) • hexahydrophthalic acid anhydride (trans-isomer)	REACH Candidate List	Used as plasticiser.
Hexahydromethylphthalic anhydride (HHPA) and insulating lakes: • methylcyclohexyl-1,6dicarboxylic acid anhydride • hexahydro-1-methylphthalic anhydride • hexahydro-3-methylphthalic anhydride	REACH Candidate List	Used as plasticiser.
Ethoxylated linear and branched 4nonylphenol	REACH Candidate List	In thermoplastic production waste using this plasticiser.
Brominated diphenylethers (PBDE)	POPs Regulation	In batches consisting mainly of thermoplastics produced before 2004. Previously, PBDE was used as
		flame retardant, production and use have ceased.

6. Explanatory note on cross-border transport

Over 180 of the 187 countries participating in the Basel Convention agreed in 2019 to better regulate global trade in mixed synthetic wastes. The new contract BC14-12is a tightening of the classification of plastic waste under the Basel Convention that regulates the transboundary movement of waste.

The effects of this decision are that, from EU countries after 1 January 2021:

- only clean and sorted plastic waste suitable for direct recycling can still be freely traded.
- the export of all other types of plastic waste, such as mixtures of various types or contaminated plastics, is subject to the notification obligation of the EWSR.

As of 1 January 2021, there are three new waste codes for plastic waste: B3011, A3210 and Y48. The ILTwebsite has more information on which rules apply to which type of plastic waste.

7. Other information

7.1Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term 'waste' should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

For plastics, here is a number of specific points for attention when assessing waste or non-waste. These points do not describe the full assessment framework.

Reuse

In order to determine whether there is reuse or a waste, it is important to establish the holder's intention with the plastic product. If a holder discards, wants to discard or needs to discard the plastic material, this is a waste. For example, when a private individual sells used outdoor furniture for the purpose of giving it a second life, it constitutes reuse and is not waste. Offering used garden furniture to a recycling store may also mean that it is reused. However, it must be the case that the store checks the suitability for re-use of the furniture when it receives the furniture and only takes up the furniture that is suitable for that purpose. In addition, there must be a high degree of certainty that the furniture can be sold again. The above explanation is also applicable to other plastic products, for example plastic toys. The assessment of whether a material is waste or non-waste will require a case-by-case assessment of the waste status of the material, based on all the facts and circumstances of that case.

Recycling

If a holder discards or wants or needs to discard the plastics, this is waste. The recipient then determines which waste treatment is to be used, if permitted by laws, regulations and policies, including those contained in this CMP. Plastic granules/recyclate can be used to produce new products. Once the recycling has been completed, the conditions set out in Article 1.1(6) Environmental Management Act and [chapter waste or non-waste] may be used to assess the existence of end-of-waste based on all the facts and circumstances of the case.

Non-waste on the market

In all cases, where plastic is placed on the market as non-waste (either directly or after recovery or not), it must comply as a minimum with the applicable requirements.
product regulation. These include, for example, REACH, the POP Regulation,Regulation (EU) 2022/1616on recycled plastic materials and articles intended to come into contact with food, Regulation (EU) 10/2011on plastic materials and articles intended to come into contact with food, and the requirements following from the Commodities Act.

7.2Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to 'potentially recoverable critical materials'.

Option 1: [waste] is not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report ‘Recovery potential secondary critical raw materials based on waste plans in the LAP3’ (TNO, 2023).

[Section 2.3.6 ‘Critical materials and high dignity’] of the CMP’s ‘Recycling of waste’ chapter provides more information on critical materials in relation to waste treatment.

7.3BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

7.4Mention of source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022a). [*Specifying conditions that prevent recycling as a minimum standard*].
- RoyalHaskoning DHV (2022b). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

Sorting and separating plastics

While innovation is behind, the DKR standards that describe how to sort for plastic packaging waste are still guiding plastic packaging sorting policies. However, now, much more plastic can be sorted and recycled than described in these standards. This is because sorting techniques are increasingly possible. It is therefore monitored whether there are any changes or tightening of the standard from the EU.

Thermosets (including composites)

Thermosets do not melt when heated, but they gasify. This makes recycling difficult. The (chemical) recycling techniques for these thermosets are continuously sought out to ensure the preservation of the material. The disadvantages of these techniques are currently the relatively high energy costs and the potential for monomers. Polymers (plastics) will then need to be made of these materials for further use. The advantage of these techniques is that they produce fairly pure materials that are qualitatively (almost) equivalent to ‘virgin’ plastic. At this stage, recycling techniques are still under development and not on the market, but this may happen in the future.

Only when market developments warrant it and after evidence of recycling techniques for (certain) thermosets is the adaptation of the minimum standard to recycling envisaged. In addition to the environmental benefits of this technique, we also look at costs, processing security and the impact on the cross-border transport of plastics, for example.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Metal waste plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading 'Assessment frameworks'.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a 'content' or 'bookmarks' in the browser or the PDF reader's left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section 'Tools'.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

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Status: Circular Materials Plan draft for public consultation

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Metal waste plan

This waste plan provides the assessment framework that competent authorities should take into account when granting permits for waste treatment and cross-border transport of metals.

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of metals. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Assessment frameworks

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Explanatory Note

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   7.1. Waste or non-waste
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   7.4. Mention of the source

Future plans

Assessment frameworks

This section of the plan describes how companies should process metals, including the focus points. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
Metals; and to a large extent (>50 weight). %) solid waste consisting of metals	These include: • Both ferrous and non-ferrous metal waste substances: scrap metal, stainless steel, zinc residues, aluminium, copper, lead and alloys, precious metals, metal dust and catalysts used in cars; • metals collected separately and delivered separately; • metal fractions produced by sorting or separating mixed waste streams. For the 'mostly metal-based waste' category, they are covered only if they are not covered by another waste plan.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below address the following aspects that are relevant to permitting the processing of metals:

- mixing permission (2.1)
- minimum standard (2.2)

2.1Mixing of waste

Mixing is designated in the Environmental activities decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements. The [Mixing permit requirement decision tree] is a tool to check if mixing requires a permit

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories. The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
24	Nga	Metals	These are all kinds of metal waste mainly consisting of metal such as iron, stainless steel, non-ferrous metals and their mixtures, turnings, filings, shavings and metal dust, without adhering oil, empty metal packaging, shredder metal, metal originating from sorting.
25A	GA	Solid wastes that consist of more than 50% by weight of metals and are hazardous waste	This includes, for example, construction and demolition waste, metal-containing sorting fractions, or other waste materials containing more than 50% of metallic parts, which is hazardous waste due to contamination by heavy metals.

25B	Nga	Solid waste containing more than 50% by weight of metals, other than hazardous waste	This includes, for example, construction and demolition waste, metal-containing sorting fractions, or other waste materials, which contain more than 50% of metallic parts and which are not hazardous waste. For example, metal items with a small amount of other material such as a metal handle with only a plastic seat or an old bicycle with plastic handles.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 'Keeping waste separate'].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

This plan does not contain any specific provisions for metals that should be taken into account by the Authority, in derogation from the general assessment frameworks.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of metals.

2.2Minimum standard

The processing of metals must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant a permit for the processing of the waste in a way that is lower quality than the minimum standard if
exceptional cases, such as emergencies or the presence of certain SVHCs (see also the [Guidance on the use of minimum standard]).

The following minimum standards apply to the processing of metals:

Component flow	Waste	Minimum standard
a	Metals	Recycling
b	Solid waste, largely (>50 % by weight) of metal	Recycle at least the metals and process the sorting residue as required by [Waste plan residues diverse]. It is also permitted to burn such solid waste in a plant that ensures that the metals from the residues are recovered for recycling (e.g. WIPs).

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 'Explanation of the minimum standard'].

Wastes containing certain SVHCs

SVHCs may be present in the waste. Both the legislation described and the assessment frameworks of [Chapter mengen van afvalstoffen] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether the transfer of metals is permitted. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [SVHCs and other substances of concern] in this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Scope of the assessment framework, grounds and conditions for objection

The following assessment framework applies to all metal substreams as specified in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for re-use and (preliminary recovery followed by) recycling	If the degree of recovery does not justify the shipment. For the metal fraction, any landfilling is too high (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR)).
Other recovery	This is because higher-quality processing in the form of recycling can take place at least for the metal fraction (objection ground Article 12(1)(a), (b) and/or (n) EVOA (Article 12(1)(a) and, for transfers to the Netherlands, Article 12(1)(k) EVOA)).

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection

All forms of (preliminary) disposal except landfilling	This is because higher-quality processing in the form of recycling can take place at least for the metal fraction (the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
Landfill	This is due to the higher quality of processing in the form of recycling of • at least the metal fraction is possible, and • under national self-sufficiency; and/or • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. [Section 7.1 'Waste or non-waste'] provides specific information on this.

4. Explanatory notes on the scope

This plan covers all types of metal waste in solid form. Both for metal waste that has been collected separately or delivered separately and for metal waste resulting from sorting or separation. Metal waste consists of ferrous and non-ferrous metal waste substances. They are metals in the waste stage and solid (largely metallic) wastes, such as (sorted) metal packaging, (metal) scrap, stainless steel, zinc residues, aluminium, copper, lead and alloys, precious metals and metal dust arising from metal processing during processes such as grinding, drilling, turning and sanding.

Metals can also be present in catalysts (substances to enhance chemical reaction) and metal salts used in various (chemical) industries. These catalysts and metal salts are not covered by the metal waste plan but by [Waste plan Process-dependent industrial waste]. Catalysts used in cars for
Exhaust gas treatment and removal from end-of-life vehicles during dismantling are covered by this metal waste plan.

Metallic ash from thermal processes remains (in-boiler) after combustion or thermal treatment of substances in industrial processes. These axes can contain a considerable amount of metals, but are not within the scope of the Metals Waste Plan. These axes are subject to the [Waste plan for process-dependent industrial waste]. Bottom ash that remains after incineration of household waste and commercial waste in a grate incinerator or a fluidised-bed incinerator is covered by [Waste plan for ash incineration plants]. Ferrous and non-ferrous metals separated from the bottom ash are however covered by this Metal Waste Plan.

Radioactive scrap not part of the CMP

A small proportion of metal waste is radioactive. For radioactive waste management, the CMP does not provide a specific review framework, as it is addressed by other regulations (see the [Review frameworks section]). The processing of radioactive waste is subject to the Nuclear Energy Act. For policy, please refer to the paper 'Radioactive waste'.

Learn more about radioactive scrap

The Radioactive Scrap Detection Decreerequires the use of equipment for detecting radioactive scrap and requires financial security for the costs of removing it. The Regulation on the detection of radioactive scraplinked to the decision imposes further requirements on the measuring equipment to be used, the recording of measurement data and the skills and competencies of the responsible expert within the scrap processing company. If, after measurement, it appears that a scrap load is likely to contain nuclear fuels, ores or radioactive substances, this must be declared (Nuclear Energy Act). To this end, the Inspectorate of

the Ministry of VROM (now Human Environment and Transport Inspectorate (ILT)) is especially open to scrap processing companies under the Metal Inspection Directive.
and radioactive scrap(2005) prepared. The Directive is a practical interpretation of the Nuclear Energy Act and the regulations based on it in the field of metal and scrap containing radioactive substances.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Metallic ash resulting from (gas cleaning during) thermal processes, metal salts and catalysts used in industrial production processes	[Waste plan process-dependent industrial waste]
Asbestos-containing scrap metal	[Waste plan asbestos-containing waste]
Batteries and accumulators	[Waste plan batteries]
Cable remnants	[Waste plan for cables and scrap]
Mixed fractions from the shredding of metal-containing waste	[Shredder waste waste plan]
Waste from construction and demolition activities not yet sorted metal	[Waste plan mixed construction and demolition waste]
Metal packaging to the extent that it is still part of mixed fraction packaging waste	[Packaging waste plan]
Gas cylinders and other pressurised containers	[Waste plan pressurisers and fire extinguishers]
Underground tanks	Processing according to the [waste hierarchy] as described in section 'guidance tools'.
End-of-life vehicles	[Waste plan for end-of-life vehicles]
Waste metal contaminated with oils and fats	[Waste plan other oil-containing waste]
PCB-containing devices	[Waste plan PCB-containing waste]
Electrical/electronic equipment	[Waste plan for electrical and electronic equipment]
Metal-containing (precious) baths	[Waste plan waste water streams]
Metallic sludges	[Waste plan residues]
Mercury-containing waste	[Waste plan mercury and mercury-containing waste]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 020110; 100210; 120101; 120102; 120103; 120104; 150104; 160117; 160118; 170401; 170402; 170403; 170404; 170405; 170406; 170407; 170409*; 190102; 191001; 191002; 191202; 191203; 200140.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1 Keeping waste separate and mixing

Mixing often requires a permit (see [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for allowing the mixing of [waste]. In the case of 'mixing', this is described in [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep metals separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	In the construction and demolition sites of construction works, there is a legal requirement to keep waste separate and separate for waste metal that is hazardous waste and that is released during the actual performance of construction and demolition work on these works (cat.25A) *(Art. 7.24, 7.25 and 7.26 Environmental Structures Decree)*.
Keeping industrial waste and hazardous waste separate *(general)*	Businesses must always keep metal that is hazardous waste (cat.25A) separate and dispose of it separately, unless they have a mixing permit *(Art.). 3.195 and art. 3.196 Bal and 'mixing of waste' chapter*. If a company stores larger quantities of metal waste (cat.24 or cat.25B), it must always keep them separate from each other and from other waste unless a mixing permit has been granted (*Art.*) *3.195 and art. 3.196 Bal* and *waste mixing chapter*). The quantities in storage are laid down in Article 3.185 Bal. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to 'disposers' before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Businesses must always keep metal waste separate by waste category and dispose of it separately *(Art.). 3.39 Bal in combination with [Keeping business waste and hazardous waste separate])*. Exceptions are limited. These are described in that section of the CMP. A company that still wants to mix metal waste with other waste needs a permit. The 'Mixing of waste' section of the CMP and [Section 2.1] of this plan provide the assessment framework for mixing permission. The exception is the mixing of non-hazardous metal waste with hazardous metal waste (25A with 25B). This is allowed on the basis of general rules, as this is considered a single waste category (*Explanatory notes to Article 3.39 Bal*). The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep metal waste sent separately separated by waste category *(Art.). 1b. Waste Collection Decree)*. This applies both to metals that are hazardous waste and to metals that are not hazardous waste (cat.25A and 25B). No derogation is allowed.
Recycling centre *(Bulky household) waste)*	Metal is one of the 18 wastes for which the waste collection point must have a storage facility or indicate to individuals where it is possible to access it if the waste collection point itself does not take up this waste *(Article*). *4.623 Bal).* For metal, the competent authority may issue a specific requirement authorising the waste collection site not to have a separate collection facility, but to store it as a smart mixture. Conditions include that it is impossible to have a separate facility for all 18 wastes and that the same level of waste separation is achieved through post-separation or other measures. In any case, metal must not be mixed with the residual container. See [hoofdsteak gescheiden afvalstoffen].
Municipal collection *(household waste)*	Municipalities are required to collect metal separately from households. For metal, although separate collection at the source is mandatory, exceptions are possible if it does not adversely affect the quantity and quality of recycling (ground (a) of Article 10 WFD). [Chapter on separate collection of household waste] sets out the obligations of municipalities.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of ‘mixing’. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.5 ‘mixing prior to or during landfilling’]

- [Section 4.2.2 'Mixing of hazardous waste']
- [Section 4.2.4 'Mixing of POP-containing waste'] and/or [Section 4.2.3 'Mixing of waste containing PBT or vPvB substances or substances of 'equivalent care']

Check all review frameworks in the chapter to see if they are applicable to the mixing of metals.

By way of derogation from the 'mixing of waste' chapter, the competent authority may only grant a permit for mixing metal waste that is hazardous waste (waste category 25A) with other metal waste (waste category 25B) for recycling of the metals if, during processing, the hazardous substances are (partly) degraded or separated below the hazardous waste limit (see [Section 4.2.2 'mixing of hazardous waste'] of the 'mixing of waste' chapter.

The essence of allowing the mixing of metals is that processing in accordance with the minimum standard should remain possible after mixing. For metals, it means the following:

- The competent authority may authorise mixing of metals within and between waste categories 24 and 25B for as long as recycling of metals is still possible. In practice, recycling companies will sort the metals and metal-containing waste out by quality and not mix it.
- Mixing of metal waste which is hazardous waste (within waste category 25A) for recycling of metals may be authorised by the competent authority.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Reuse does not imply waste treatment. [Section 7.1 'Waste or non-waste'] describes the possibilities for re-use if known.
Preparing forre-use	If metal waste is suitable for such, preparation for reuse (as defined in the definition of 'preparation for reuse') on the basis of the minimum standard is permitted.
Recycling	The minimum standard for metal waste is recycling. The purpose of processing 'largely metal-containing waste' should also be to recycle the metals.
Other usefulapplication	Forms of recovery other than recycling (if any) or preparation for reuse are not permitted because metal recycling is always possible. The exception is the residue from the processing of 'largely metal-based waste'.
Incineration as a formof disposal	Not applicable for metal waste. The exception is the residue from the processing of 'largely metal-based waste'.
Landfill	Dumping is prohibited for metals. Only a non-combustible residue from the processing of 'waste consisting largely of metals' may be landfilled.

5.2.1 Preparing for reuse

Activities that lead to the reuse of metal structures or parts by simple operations such as cleaning and checking are permitted. This activity complies with the minimum standard. Preparation for reuse is a process that has the purpose of reusing the metal for the same application as that for which it was first intended. Otherwise, recycling will be deemed to be present.

5.2.2 Recycling

The minimum standard for the processing of metal waste is recycling. Waste substances mainly consisting of metals and therefore covered by this waste plan may be cleaned and/or metals must be separated. The metals can then be recycled. A minimum standard has also been included for any resulting residues in order to minimise the amount of waste to be landfilled (see the following paragraphs).

This waste plan allows the incineration of solid waste consisting largely, but not exclusively, of metals, under the condition that the metals contained in the residues from incineration can be recovered for recycling. This means that they must be of sufficient size to allow, for example, the magnets of such post-treatment to recover the metal.

Metal waste materials containing iron and steel scrap, such as iron and steel scrap, cast iron scrap and stainless steel, are used in the production of iron and steel. Non-ferrous metal waste materials such as zinc, aluminium, copper, lead and alloys of such non-ferrous metals, slag, ash, metal dust, precious metals and catalysts may be used in melting and casting installations, which are usually specialised in one type of metal. By adding an additional sorting step separating the different qualities within each type of metal before melting the different metals, higher-quality recycling can be achieved (RHDHV 2022). Such an additional sorting step is not yet mandatory.

Sorting residue from metal processing

A sorting residue can be produced when processing metals. Sorting residue is the fraction remaining after the separation of all mentioned sub-fractions in such a way that it leaves a fraction which no longer contains materials suitable for recycling. What 'is no longer suitable for' is not to be described with criteria and is at the discretion of the Authority. For the processing of the sorting residue, see the [Waste plan residues diverse].

5.2.3 Other recovery

Other recovery is only permitted for residues that may arise from the processing of 'largely metal-based waste'.

5.2.4 Incineration as a form of disposal

Disposal by incineration is only permitted for the processing of a combustible residue generated when 'waste, largely consisting of metals, is processed'.

5.2.5 Landfilling

Under theLandfills and Waste Dumping Prohibitions Decree(Bssa), Article 1(1), Category 38, a dumping ban applies to metals.

Dumping is only permitted (minimum standard) for processing a non-combustible residue that would be produced by processing 'waste consisting largely of metals'.

5.3Substances of very high concern (SVHCs) and other substances of concern

SVHCs in the table below are known[38] to be present in metals in concentrations above the concentration limits in [Table 1] of the chapter 'SVHCs and other substances of concern'. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 'Legislation to phase out and restrict use'] of the chapter 'SVHCs and other substances of concern'.

Waste Processor Acceptance and Processing Policy

38Source: SGS Intron, 2019, SVHC in waste.

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the 'Addressing Substances of Very High Concern' (IPLO) page and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

In mixed batches of metal waste, no SVHC is to be expected in concentrations above the concentration limit (cgw) indicated in [Table 1] in the chapter 'SVHCs and other substances of concern'. Efficient waste management does not require the analysis of batches of mixed metal waste (e.g. from the waste collection site) for SVHCs. There may be SVHCs in specific batches of metal waste that are important for the waste treatment method. Most SVHCs in metal waste are metals (metallic compounds) present in metal alloy or in the top layer, but specific batches may also contain other SVHCs, for example due to their use or contamination (e.g. by filters). The table below provides a (non-exhaustive) list of SVHCs that may be present in a specific batch of metal waste.

This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

SVHC	Regulations	Waste and description
Cadmium compounds	REACH Annex XVII (restriction 23)	In melting valves in sprinklers and gas cylinders. May not be used in metals in concentrations greater than 0.01% from 10 December 2011.
Chromium (VI) compounds	REACH Annex XVII (restriction 28, 47)	Used as a corrosion inhibitor or in pigment in (surface) metal.
Lead compounds	REACH Annex XVII (restriction 30, 63)	In metals and in surface coating.
Mercury Mercury compounds	REACH Annex XVII restriction 18 and 18a	On steel released during the dismantling of oil and gas extraction facilities. *N.B. Metal with a mercury content exceeding 0.1 mg/kg ds must be processed according to [Mercury and mercury-added materials and products waste plan].*
Asbestos fibres	REACH Annex XVII (Restriction 6)	Asbestos can contaminate steel released during the dismantling of, for example, buildings, ships, trains and industrial installations. This information should be known from the asbestos inventory when the waste is delivered to the processor.
		N.B. Steel scrap containing asbestos must be processed in accordance with [Waste plan for waste containing asbestos].
Arsenic compounds	REACH Annex XVII (restriction 19)	In metal alloys and semiconductors.
Nickel compounds	REACH Annex XVII (restriction 27)	In stainless steel, magnets and electrodes.
Beryllium	REACH Annex XVII (restriction 28)	Uses structural metal applications, such as aircraft construction, anti-sparking tools, springs and membranes, in lightweight, and surgical tools.
Cobalt sulphate	REACH Annex XVII (restriction 28, 30)	For example, compressors, turbines, high-speed steel, permanent magnets and catalysts. Used as a corrosion inhibitor.

Cobalt and its compounds	REACH Annex XVII (restriction 28, 30)	In compressors, turbines, high-speed steel, permanent magnets, catalysts and anti-corrosion layers (Zn-Co galvanisation). Applied as steel hardening or as anti-corrosion agent.

6. Explanatory note on cross-border transport

Classification in the case of shipments of waste

Several procedures are described in the WSR. The information requirement (Article 18nEVOA/ Article 18 EVOA) applies to waste covered by Article 4(4) and (5) nEVOA (Article 3(2) and (4) EVOA). The term 'green list' is also used in daily practice for these wastes. The 'green list' is defined only in the OECD Decision and is part of the Annex III EVOA. In many cases, 'green list waste' can be shipped without notification, provided that it contains the information specified in Annex VII of the EWSR. These are waste that has not been mixed with other waste and can be processed elsewhere without significant environmental burden. The notification procedure applies to waste covered by Article 4(1), (2) and (3) nEVOA (Article 3(1) and (3) EVOA). The term 'orange list' is also used in daily practice for these wastes. The 'orange list' is defined only in the OECD Decision and is included in the Annex IV WSR.

Annex III of the EWSR contains two codes under which scrap metal can be classified. These codes are B1010 and B1050. A mixture of B1010 and B1050 also qualifies as 'green list waste', as this mixture is included in Annex IIIA of the EVOA. Shipments of such waste are subject to the information requirement. Metal wastes may be of different origins and thus of different quality. In practice, it is not always clear whether metal can still be classified as 'green list waste' if contaminated. If metal waste is too contaminated to be shipped as 'green list waste', the lot will be classified as 'non-classified waste' and the
notification procedure. In order for metal waste to be classified under the 'green list' code B1010 or B1050, the provisions of the Policy Rule on Administrative Enforcement of Contaminated Paper-, Plastic- and Metal Waste 2022 must be complied with.

The waste Chromium VI containing (metal) is listed in Annex IV of the EVOA under code A1040. The transfer of Chromium VI-containing (metal) is subject to the notification procedure. See also the ILT's website.

7. Other information

7.1 Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term 'waste' should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

For metal, here is a number of specific points for attention in the assessment of waste or non-waste. These points do not describe the full assessment framework.

Reuse

In order to determine whether there is reuse or waste, it is important to establish the holder's intention with the metal products. If a holder discards or wants to discard the metal, or has to discard it, it is a waste. If the holder wishes to resell the metal products, this may be an indication that the products are not waste but are reused. There are more factors that will determine whether this reuse is possible or desirable. For example, the suitability of the metal products for reuse needs to be assessed. In addition, there must be a high degree of certainty that these metal products can be sold again. The assessment of whether a material is waste or non-waste will require a case-by-case assessment of the waste status of the material, based on all the facts and circumstances of that case.

End-of-waste

Metal produced during demolition works is almost always waste. It is only if the holder already knows where the metal will be reused and does not have to undergo any further processing during a demolition contract that the metal may not be waste. This includes, for example, the reuse of steel beams, profiles and slabs made of existing structures. The potential for reuse of metal can be assessed in the demolition chain. Ideally, this assessment should be done as early as possible, before scrapping. If it is clear that the metal can still be reused, it will be demolished more carefully. If the demolition waste collector does not pass this step, they can also carry out this assessment. After preparation for reuse or recycling has been completed, the conditions set out in Article 1.1(6) Environmental Management Act(WM) and [Chapter on waste or non-waste] allow an assessment of whether end-of-waste exists, based on all the facts and circumstances of the case.

Please note: For certain types of scrap metal, a Regulation applies, see the following paragraph for further details.

Scrap metal (End-of-waste Regulation)

For certain types of metal lap, the European Regulation (EU) No 333/2011is in force. This Regulation lays down criteria for determining when iron, steel and aluminium scrap, including aluminium alloy scrap, cease to be waste. All iron, steel and aluminium (alloy) scrap which meets the requirements of Section 2 of Annex I falls within the scope of this Regulation. This Regulation is the assessment tool to determine whether the iron, steel and aluminium (alloy) scrap, falling within its scope, is waste or non-waste. Waste status assessments of that iron, steel and aluminium (alloy) scrap on other grounds are not permitted.

Copper scrap (end-of-waste Regulation)

For copper lap, the European Regulation 715/2013is in force. This Regulation lays down criteria for determining when copper scrap ceases to be waste. All copper scrap which meets the requirements of Section 2 of Annex I falls within the scope of this Regulation. This Regulation is the assessment tool to determine whether the copper scrap, which falls within the scope of the Regulation, is waste or non-waste. No assessment of the waste status of copper scrap for other reasons is permitted.

Non-waste on the market

In all cases, when metal is placed on the market as non-waste (either directly or after recovery or not), it must comply as a minimum with the applicable product regulations. These include, for example, REACH, the POP Regulation and the Living Environment Law (Structures) Decree.

7.2Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to ‘potentially recoverable critical materials’.

Metal waste contains the following potentially recoverable critical materials according to the report ‘Recovery potential secondary critical raw materials based on waste plans in the LAP3’ (TNO, 2023): titanium, tungsten, cobalt, lithium, silicon, germanium, tantalum, magnesium, antimony and PGM[39]. For the purpose of recovery, the report considers the waste to be promising. The study also looked at techniques to recover critical materials and where they are available within the EU. Waste processors can use this overview to make choices for developing techniques within the Netherlands or, for example, to cooperate with countries within the EU that have experience with the technique and/or are equipped with capacities to recover certain materials.

[Section 2.3.6 ‘Critical materials and high dignity’] of the CMP’s ‘Recycling of waste’ chapter provides more information on critical materials in relation to waste treatment.

7.3BREF in relation to minimum standard

39PGM is for platinum-group metals and includes palladium, rhodium, osmium and ruthenium, in addition to platinum.

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

7.4 Mention of source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

Because metals are financially valuable and technically relatively easy to separate from each other and other materials, metals are almost always recycled. It is possible to sort not only by metallic type (e.g. stainless steel), but also by different qualities within this metallic type.

Some techniques are under development to produce scrap in the south by combining improved shredder techniques, proper pre-treatment and sorting techniques. Purer scrap can then be used to produce higher quality steel, thereby enabling higher quality recycling. These techniques are still under development. If those techniques can be effectively used, additional sorting steps may be added to the minimum standard in the event of an update of the CMP.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Residual waste plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The words in the text are words for which the website has the meaning given in a look-out box. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

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Website: circulaire materials plan.nl

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Residual waste plan

This waste plan provides the assessment framework that competent authorities should take into account when granting permits for waste treatment and for the cross-border transport of residual waste.

Synopsis

The first part of this plan contains the assessment frameworks for the authorisation of the processing and cross-border transport of residual waste. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans in the CMP, see the [Introduction part 4 Chain and Waste Plans].

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Assessment frameworks

This section of the plan describes how businesses should process residual waste and the focus points. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
Residual household waste (coarse and fine)	Residual waste is a mixture of household waste generated after individual partial streams (such as organic waste, paper/cardboard, glass) are separated by households and collected/disposed of separately. Residual waste can be both small and bulky household waste. Residual household waste includes: - small and bulky residual household waste collected as such from citizens' homes or from drop-off facilities; - Bulky household waste collected from citizens' door-to-door residual waste, e.g. with the bin lorry - The residual fraction (the 'other' or 'residual' bin) in the collection point remaining after separate delivery of components of bulky household waste to a municipal collection point; - The waste fraction remaining from post-separation of mixed household waste after recyclable fractions have been separated.
Residual fine business waste	This plan deals only with *fine* residual waste from businesses. This is waste from businesses, which is similar in nature and composition to small residual household waste. Residual fine waste from businesses includes: -residual business waste left at businesses from the commercial, services and public sectors (HDO) and other non-industrial businesses; -residual non-process waste remaining at industrial businesses; -non-specific hospital waste remaining at healthcare businesses.
Residual waste from international operating means of transport	This waste is subject to specific legislation. If residual waste includes catering waste from means of transport operating internationally, it is the category 1 material referred to in the European Animal By-Products Regulation (EC 1069/2009).
Sorting residue	Residual waste arising from the sorting or other processing of residual household waste and comparable residual waste from businesses.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The paragraphs below address the following aspects that are relevant to permitting the processing of residual waste:

- mixing permission (2.1)
- minimum standard (2.2)

2.1 Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check if mixing is a licence is required. In addition, the [chapter immobilisate, filler or aggregate] describes when an authorisation is required for the production of construction materials from waste materials.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

N°	GA/NGA*	Bal waste category	Wastes covered
8	Nga	Component streams of bulky household waste from collection points subject to a tailor-made requirement under Article 4.623 may be stored in the same storage facility.	Concerns 'smart mixtures'. These are combinations of waste which, in principle, have to be stored separately at the collection point, but can nevertheless be combined through a tailor-made provision (this can be done for 13 out of 18 bins). This is not a residual waste in the sense of this waste plan, but is nevertheless mentioned because of its similarity. See [Chapter on household waste separation].
9	Nga	Coarse domestic residual waste that is presented mixed or not kept separated by type during collection.	This refers to bulky household waste collected via route collection and/or collection of a packed or dry-run vehicle.
36	Nga	Waste covered by the Animal by-products Regulation	Residual waste containing catering waste from means of transport operating internationally is included in this category. This is category 1material as referred to in the Animal By-Products Regulation.
112B	Nga	Other non-hazardous waste that may not be disposed of in a landfill in accordance with the Landfills and Waste Dumping Prohibitions Decree [Besluit stortplaatsen en stortverboden afvalstoffen] or	This category includes: • small residual household waste, • bulky residual household waste from the 'residual container' at the collection point, • small residual waste from businesses;
		a minimum standard in the Circular Materials Plan.	• residues arising from the sorting or other processing of residual domestic waste and residual waste from businesses.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 'Keeping waste separate'].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

This plan does not contain any specific provisions for residual waste to be taken into account by the competent authority in derogation from the general assessment frameworks.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of residual waste.

2.2 Minimum standard

The processing of residual waste should be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the processing of residual waste:

Component flow	Waste	Minimum standard
a	small residual household waste and small residual waste from businesses.	Incineration as a form of disposal. Sorting, post-separation or other processing aimed at the recovery of (part of) the residual waste is permitted, provided that the residual residue remains at a minimum ready for incineration.
b	Bulky household waste offered in mixed form or not kept separate by type during collection (e.g. route collection, use of waste collection) (cramming) press cars, etc.)	Sorting or other processing with the aim of separating as much monostreams as possible that are suitable for recycling, provided that the residual residue can still be incinerated to a minimum. Recycling options must be equivalent to what would be possible if the components in question had been kept separate by the primary disposer. This may mean that in licences from companies receiving this waste will be included to control the risks of disposal for lower-grade forms of processing than recycling, such as incineration or landfill.
c	Bulky residual household waste from collection point (the container 'other' or 'residual' at collection point)	Incineration as a form of disposal.
d	Residual waste from means of transport operating internationally containing catering waste falling under category 1 of the EU Animal By-Products Regulation.	Processed in accordance with the provisions of the Animal By-Products Regulation.
e	Residue left after sorting or otherwise processing	Process according to the [Waste plan residues]
	residual household waste (small and bulky) and residual fine business waste	

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 'Explanation of high-quality processing'].

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether the transfer of residual waste is permitted. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Animal by-products Regulation

If animal by-products are present or present, the Animal by-products Regulationprevails for cross-border transport and not the EVOA. Cross-border transport of animal by-products mixed with other waste is subject to the WSR if the other waste is hazardous waste.

Relation with other waste plans

For the sub-streams in this waste plan where other waste plans are referred to for processing, no assessment framework for the transfer is included in this section. This is the case for component flow (e).

Scope of the assessment framework, grounds and conditions for objection

The following assessment framework applies to all residual waste partial streams as indicated in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see section [section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether there are specific

provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for reuse for component flows (a) and (c)	Given the nature and/or composition of this waste, reuse is not a viable option.
Preparing for reuse for component flow b	If the degree of recovery does not justify the shipment. This is the case for sub-stream b waste when part of the waste shipped is landfilled or otherwise disposed of (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR)).
(Interim recovery followed by) recycling	If the degree of recovery does not justify the shipment. This means that any landfilling is too much (grounds for objection 12(1)(b) and 12(1)(g) EVOA).
Other recovery for component flows (a) and (c)	If the degree of recovery does not justify the shipment. This means that any landfilling is too high; and for shipments of foreign combustible waste to the Netherlands if there are obstacles based on the import ceiling at the time of submission of the notification. See [Section on limiting import of combustible waste]. (ground for objection Article 12(1)(a), (b) and/or (e) and (i) EVOA (Article 12(1)(a) and (g) and, for transfers to the Netherlands, Article 12(1)(k) EVOA)).
Other recovery for component stream b	This is because higher-quality processing is possible after sorting a part of the mono-streams into recycling, and if the degree of recovery does not justify the shipment. This means that any landfilling is too much (ground for objection Article 12(1)(a), (b) and/or (e) and (i) EVOA (Article 12(1)(a) and (g) and, for transfers to the Netherlands, Article 12(1)(k) EVOA)).

Disposal for which the shipment is *not* authorised	Specific provisions and grounds for objection
All forms of (preliminary) disposal except landfilling for component stream b	This is because higher-quality processing in the form of recovery is possible (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
Incineration as a form of disposal for component streams a and c	For shipments of foreign combustible waste to the Netherlands, if, at the time of submission of the notification, obstacles exist based on the import ceiling. See [Section on limiting import of combustible waste]. (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
Other forms of (preliminary) disposal other than incineration as a form of disposal or dumping for sub-streams a and c	If the processing results in a fraction to be landfilled due to national self-sufficiency; and in the case of transfer to the Netherlands due to national legal provisions, if a portion is landfilled (because the conditions of Article 11(1)(a) to (h) and/or (2) nEVOA are not met (objection ground Article 11(1)(a) and (b) EVOA)).
Landfill	Because of the higher quality processing possible, and/or • under national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions
	(because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. Specific information is provided in [Section 6 ‘Waste or non-waste’].

4. Explanatory notes on the scope

This plan covers residual waste from households and similar waste from businesses. Residual waste is the waste remaining in private households and businesses after individual partial streams have been kept separate and disposed of separately. [Chapter on separate collection of household waste] describes the waste streams from private households that are separately collected by municipalities and [Chapter on keeping commercial and hazardous waste separate] lists the waste that businesses must keep separate and deliver separately for treatment.

Please note [for participation on the draft CMP]: This plan combines two sector plans from LAP3: sector plan 1 ‘Residual household waste (small and bulky)’ and two ‘Residual waste from businesses’.

Residual household waste

Residual household waste refers to a mixture of different components according to their nature and composition, which results from separate separation of individual sub-streams (organic waste, paper/cardboard, glass, etc.) and separate collection/disposal. This can be both small and bulky household waste. The residual waste of municipalities that have opted for post-separation comprises more sub-streams that can be separated by post-separation than in the residual waste of municipalities that have waste at source separated by households.

Household residual waste includes both fine household waste and bulky household waste. Bulky household waste delivered to the street in a mixed form or, in case of collection, has not been kept separate by type (e.g. route collection, use of collection vehicles, waste collection vehicles, etc.) is also covered by this waste plan.

At the collection point, this is called the ‘residual bin’. This bin contains the waste that remains after the recyclable sub-streams are deposited in dedicated containers. A municipality has a duty to collect 18 specific waste at a collection point. If all of these 18 substreams have a facility in place and the management of the collection point sends for the correct use of these facilities, the waste in the residual bin will contain few more recyclable waste. The [chapter on separate collection of household waste] provides further details on the rules for recycling centres.

Smart blends and custom instructions

A limited number of these 18 wastes are allowed to be collected together, the so-called smart mixtures. This addresses the situation where there is insufficient space at the collection point to have separate facilities for all 18 mandatory waste types. If it is not physically possible to place separate facilities for such waste, a tailor-made provision for 13 of such waste may allow one or more of these waste types to be mixed together provided that an equal level of waste separation is achieved by post-separation or other measures. There is no residual waste at that point, but it does seem important to mention it here. As a custom instruction also stipulates that these waste types must be separated later, no minimum standard is included in this waste plan for these smart mixtures. Mixing with the waste bin of the collection point is not permitted, even with a custom instruction.

In the Living Environment Law (Activities) Decree (Bal), collected or delivered household waste is equated with commercial waste. This means that after the collection or delivery of household waste, the Bal’s industrial waste rules apply to household waste.

Residual waste from businesses

Residual waste from businesses is a mixture of parts of the business waste, different in nature and composition, after substreams have been kept separate and disposed of separately. This waste plan relates only to small residual waste from businesses. In practice, residual waste is similar in nature and composition to small residual household waste.

Residual waste comes from:

- Commercial, Service and Public Sector (HDO) Industries;
- industrial companies (NB: this is not process-dependent industrial waste);
- healthcare businesses (please note, therefore, that it is not specific hospital waste); • other non-industrial businesses that are also not part of the HDO sector.

Examples of companies in the HDO sector include retail and wholesale, repair shops, transport companies, hotel and catering, outdeliveries, financial and other business and non-business services, renting and trading of movable and immovable property, public services, education, sport and recreation.

Residual waste from businesses includes packed goods from non-industrial plants that have not reached the consumer and are disposed of for processing (e.g. from supermarkets) for reasons such as damage or an over-the-day period.

Residual waste remaining in industrial companies and non-specific hospital waste remaining in healthcare companies is also included in this waste plan, as it is similar in composition to household residual waste. This is often waste generated in support activities such as office or canteen support operations.

In addition, this waste plan includes residual waste from other non-industrial companies that are also not covered by the HDO sector. Examples include residual waste from the agricultural sector and residual waste from the construction sector.

residual waste from means of transport operating internationally

Catering waste from means of transport operating internationally is called category 1 material under the Animal by-products Regulation(EC 1069/2009). This waste is similar in composition to small residual waste from businesses, but processing is subject to specific rules. Therefore, this waste is included as a separate type in this waste plan.

In case of doubt as to whether a rubbish bag or container with residual waste contains such kitchen waste or food scraps, the whole rubbish bag should be considered as Category 1 material (precautionary principle). Their processing is governed by the rules of the Animal By-Products Regulation.

Residues from sorting or post-separation of residual waste

If the residual waste is sorted or post-separated, a residue is produced. The minimum standard for processing this residue is specified in the [Waste plan residues].

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Fractions of household waste collected separately from private households and businesses, if mono-flows are involved.	See the relevant plans. To the extent that mono-streams are not covered by a waste or chain plan of the CMP, treatment should be assessed against the [waste hierarchy].
Components of bulky household waste separated by type, if mono-flows are involved.	See the relevant plans. To the extent that the mono-streams do not fall under a waste or chain plan of the CMP, this waste should be treated according to the [waste hierarchy] as described in section ‘guidance tools’.

Bulky corporate waste, e.g. furniture, etc.	Processing according to the [waste hierarchy] as described in section 'guidance tools'.
Batches of packaged production waste, mash and 'over-date' products not yet reached the end user and other process-dependent industrial waste	[Waste plan process-dependent industrial waste]
Waste from food production, kitchen waste, swill, auction waste, expired products (with packaging removed)	[Biowaste waste plan]
Mixed waste generated from building, renovation and demolition of buildings and constructions	[Mixed Construction and Demolition Waste Plan]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 180104; 180203; 191210; 191212; 200301; 200307; 200399.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only paragraph 1 of this waste plan defines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for allowing the mixing of residual waste. In the case of 'mixing', this is described in [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep residual waste separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping industrial waste and hazardous waste separate *(general)*	Businesses must always keep residual waste separate and dispose of it separately, unless they are authorised to mix *(Art.). 3.195 and art. 3.196 Bal and 'mixing of waste' chapter*. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to 'disposers' before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Businesses should always keep residual waste separated by waste category and dispose of it separately *(Art.). 3.39 Bal and section 'Keeping corporate and hazardous waste separate')*.
	If a company wants to mix residual waste with other waste, it needs a permit. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep residual waste delivered separately separated by waste category *(Article). 1b. Waste Collection Decree)*.

Recycling centre *(bulky household waste)*	The Bal lists 18 wastes for which a waste collection site is responsible (must have or refer a facility itself). *Fine* residual waste is not included in this 18. Bulky residual household waste at the collection point is household waste entering the ‘residual waste bin’, because it does not fit in any of the other facilities at the collection point. If the collection point also accepts small residual waste, a separate, specific storage facility must be provided unless mixing is authorised (Explanatory notes to the Bal, Article 4.623). [Chapter on separate collection of household waste] specifically addresses separation at the collection point.
Municipal collection *(household waste)*	Municipalities are under an obligation to collect residual waste from households. [Chapter on separate collection of household waste] sets out the obligations of municipalities.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of ‘mixing’. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.5 ‘mixing prior to or during landfilling’]

Always check with all review frameworks in the chapter whether they apply to the mixing of residual waste.

The essence of allowing the mixing of residual waste is that processing in accordance with the minimum standard should remain possible after mixing. For residual waste, this means that:

- The blending of bulky household waste will generally be bulking and not mixing.
- The competent authority may authorise the mixing of bulky household waste (waste category 9) if it is treated by or transferred to a company that sorts or otherwise treats the waste with the aim of separating as many monstreams as possible that are suitable for recycling, and where the residual residue must still be minimally incinerated.
- The competent authority may authorise approved companies to mix residual waste from means of transport operating internationally (category 36) among themselves and with other waste to be incinerated (waste category 112B) as long as the waste is incinerated, after separation and sorting or otherwise.
- The competent authority may authorise the mixing of residual waste and sorting residue with each other and/or with other waste to be incinerated (waste category 112B) for as long as the waste is incinerated. Higher quality processing is also permitted.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Not applicable for residual waste.
Preparing forre-use	Not applicable for residual waste.
Recycling	The minimum standard for bulky residual household waste is aimed at recycling by sorting/separating as many recyclable fractions as possible. Sorting and post-separation for other residual waste may also be authorised. In all cases, filtering out is subject to conditions relating to the residual residue that may remain.
Other usefulapplication	Other recovery, e.g. primary use as fuel (R1), may be authorised for all residual waste, except for bulky residual household waste that is not sorted out.
Incineration as a formof disposal	The competent authority may authorise the incineration of most types of residual waste and residues from the sorting of residual waste. The exception is bulky residual household waste (from door-to-door collection) that is not yet sorted/separated because the minimum standard is sorting/separation for this

	purpose.
Landfill	Residual waste is subject to a dumping ban. Residues from the sorting of residual waste must also not be sent to landfill.

5.2.1 Recycling

Household and similar business waste is made up of various wastes. Whether or not certain waste is kept separate at source or post-separation has a direct impact on the generation and/or non-generation of residual waste.

Many, but not all residual waste is suitable for sorting or post-separation with the aim of obtaining materials suitable for recycling. The subsections below cover different residual waste types.

Bulky residual household waste (no separate collection at home)

The policy for processing bulky residual household waste focuses primarily on the recycling of materials present in the waste (Parliamentary Paper 30 872, No 41; bulky household waste). Therefore, the minimum standard for mixed house-level collection of bulky household waste requires the sorting of mono-flows. One condition here is that there are no remaining partial streams or residues that need to be landfilled. This means that these residues must at least be incinerated. Another condition is that the filtering out must be equivalent to what would have been achieved through separation at the source. For the processors of bulky residual household waste collected in mixed collection facilities, this means that the processing should be organised in order to maximise recycling options, with the restriction that the residue should at least be incinerated.

Offering and keeping separate at source is preferable to compulsory post-separation, as certain components may be poorly post-separated or other components permanently contaminate them. However, in the case of door-to-door collection, this is not always practical, and post-separation is the best way to obtain at least as much material as possible that is suitable for recycling.

Small residual household waste and similar small residual waste from businesses

Residual fine waste may be post-separated for the purpose of recycling mono streams. This is also subject to the restriction that the residue left after post-separation may not be landfilled. If post-separation replaces the source-separate collection of household waste, sorting out must be equivalent to what would have been achieved by separation at the source. This also applies to corporate waste that may be subject to post-separation. In [Section on keeping corporate waste and hazardous waste separate], the partial fractions of corporate waste that can be post-separated are indicated as options.

Only catering waste from means of transport operating internationally (often referred to as residual waste) is an exception. This waste must not be separated afterwards. This waste must be incinerated [see section 5.2.3 'Incineration as a form of disposal'].

The waste container at the collection point

The waste container from the waste collection site may be post-separated on the basis of the minimum standard with the aim of separating mono-streams for recycling.

Recycling with residue to be landfilled versus incineration

Recycling of residual waste is the primary consideration. However, if a large part of the waste is to be landfilled after the separation of recyclable fractions, integral incineration (in practice with energy recovery) is preferred.

This provision is included in the minimum standard in order to encourage the competent authority to check with an initiator who will process residual waste other than through incineration whether the fractions and residues formed do not have to be dumped. This means that compliance with this condition must also be assessed elsewhere in the processing chain. The competent authority will therefore include in the authorisation guidance instructions to prevent the authorisation of processing initiatives further down the chain leading to fractions or residues for which dumping with exemption is the only option.

The use of guidance in general is described in section 2.4.2 'the minimum standard consists of several steps' of the [Guidance on the use of minimum standard].

5.2.2 Other recovery

Residual waste may be 'incinerated' under the minimum standard 'as a form of disposal'. This means that it may also be incinerated (as a form of recovery) in a plant that meets the requirements to be an R1 plant, as high-quality processing is then permitted in this case. This may be the only form of 'other recovery' that is an option due to the nature of the waste.

5.2.3 Incineration as a form of disposal

This is the minimum standard for most of the residual waste within the scope of this waste plan. Some aspects are explained below.

The waste container at the collection point

A recycling centre manager who has a separate facility for all 18 mandatory waste types and also adequately manages the waste collection site may dispose of the 'residual' bin for incineration. The underlying idea is that the vast majority of components suitable for recycling no longer end up in the waste bin, which means that mandatory post-separation of the waste bin does generate additional costs, but relatively little additional material suitable for recycling.

Adequate provision level and segregation policy at the collection point

The conditions for proper separation are that the municipality applies a sufficiently adequate level of facilities and separation policy at the collection point. This is related to the organisation of overall waste management in a municipality. Appropriate management is also required and is detailed in [Chapter on separate collection of household waste]. This assessment will therefore have to take place when assessing a notification under Article 4.622 of the Environment and Planning Act of the Netherlands for the waste collection site or when authorising the sorting facility for bulky residual household waste.

Only with the correct level of facilities and proper management at the collection point can a residual fraction be removed to an incineration plant instead of a sorter.

Residual fine waste

Recovery is preferable for the processing of (residual) fine residual household waste and small residual waste from businesses, but due to the heterogeneity of small residual waste it is not always possible to do so. For this reason, the minimum standard is 'incineration as a form of disposal'. If residual waste is incinerated in an incineration plant, the cleaning of exhaust gas leads to a minimum amount of residual substances that is dumped. The other residues are recovered.

In addition, energy is extracted when incinerating in the incineration plant. For these reasons, the minimum standard is environmentally sound.

Catering waste from international transport companies

Catering waste from means of transport operating internationally (including residual waste) must be incinerated in accordance with the provisions of the Animalby-products Regulation. Processing of higher quality is not permitted.

This also means that their mixing with other residual waste is subject to restrictions if, for example, the residual waste goes to post-separation.

Recognition required for the storage and processing of animal by-products *– fold-out info-framework*

Catering waste from means of transport operating internationally is Category 1 material as referred to in Regulation (EC) No 1069/2009 (Animal by-products Regulation).

The Animal By-Products Regulation is the guiding principle of the Environmental Management Act (Wm), except in the case of incineration and landfilling of animal waste. In this case, both the Animal By-Products Regulation and the Environmental Management Act apply. Processing by composting or digestion of Category 1 material is not permitted under the Regulation. Incineration is a form of processing and must therefore take place in an approved plant and meet the requirements set out in Article 10 of the Animal By-Products Implementing Regulation. Dumping is not permitted due to a dumping ban pursuant to Article 1, cat. 19, of the Landfills and Waste Dumping Prohibitions Decree (Bssa).

However, approved companies may separate or sort animal by-products. Sorted materials are still Category 1 material until such time as cleansing or disinfection has taken place that no risk to public or animal health persists.

All establishments that store or process animal by-products must hold approval (in addition to an environmental permit, environmental component) based on the Animal By-products Regulation. The Minister for Agriculture, Fisheries, Food Security and Nature (LVVN) is the competent authority for issuing and verifying these approvals. The Netherlands Food and Consumer Product Safety Authority (NVWA), on behalf of the Ministry of LVVN, assesses processing routes against the Regulation and issues the necessary recognition. NVWA monitors primary companies and transport.

AO/IC policy of the incineration plant bulky residual household waste
Since the incineration of *bulky residual household waste* does not always comply with the minimum standard, incineration plants cannot simply accept such mixed streams. The acceptance policy of the incineration plants must show whether or not they accept mixed bulky household waste (from door-to-door collection).

5.2.4 Landfilling

Under the [Landfills and Waste Dumping Prohibitions Decree](BSSA), Article 1(1), a dumping ban applies to the various waste substances of this plan:

- category 15:
  a. residual household waste and comparable residual waste from businesses;
  b. partial streams of residues from the manual and mechanical processing of residual waste streams referred to in point (a);
- category 16:
  - bulky residual household waste;
  - partial streams or residues from the manual and mechanical treatment of bulky household waste;
- category 19: animal by-products and derived products thereof falling within the scope of Regulation (EC) No 1069/2009 of the European Parliament and of the Council of 21 October 2009 laying down health rules as regards animal by-products not intended for human consumption and repealing Regulation (EC) No 1774/2002 (Animal by-products Regulation) (OJ (EU) 2009, L 300/1);

5.3Substances of very high concern (SVHCs)

SVHCs for residual waste from households and businesses[40] that may occur in concentrations above the concentration limit (cgw) in [Table 1] in the chapter 'SVHCs and other substances of concern'. This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

6. Other information

6.1Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term 'waste' should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

Always waste

The materials covered in this waste plan are always waste. However, once processed, the waste status of the material may be re-examined. For example, if the demand for waste or non-waste is asked after sorting out any mono-streams, it must be assessed on the corresponding chain or waste plan of that material.

40Source: SGS Intron, 2019, SVHC in waste.

6.2Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to ‘potentially recoverable critical materials’.

Residual waste is not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report ‘Recovery potential secondary critical raw materials based on waste plans in the LAP3’ (TNO, 2023).

[Section 2.3.6 ‘Critical materials and high dignity’] of the CMP’s ‘Recycling of waste’ chapter provides more information on critical materials in relation to waste treatment.

6.3BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

6.4Mention of source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022a). [*Specifying conditions that prevent recycling as a minimum standard*].
- RoyalHaskoning DHV (2022b). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

No developments are currently foreseen that could lead to changes in the assessment frameworks of this waste plan.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Shredder Waste Waste Plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading 'Assessment frameworks'.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a 'content' or 'bookmarks' in the browser or the PDF reader's left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section 'Tools'.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

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Shredder Waste Waste Plan

This Waste Plan provides the assessment framework that competent authorities should take into account when granting permits for waste processing and cross-border transport of shredder waste.

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of shredder waste. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Future plans

Assessment frameworks

This section of the plan describes how businesses should process shredder waste and the focus points. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

Shredder waste is the general term for the waste stream generated from the shredding of metal-containing waste such as end-of-life vehicles and waste electrical and electronic equipment. It is the fraction remaining after specific mono-flows, such as metals, have been separated. The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
Residual stream 'car shredding waste'	This is the residual flow left during the shredding of *end-of-life vehicles only*[41], after specific materials have been separated during or after shredding.
Residual stream 'other shredder waste'	This is the residual flow from the shredding of metal-containing waste other than end-of-life vehicles, after the separation of specific materials during or after shredding.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below address the following aspects that are relevant for authorising the processing of shredder waste:

• Mixing permission (2.1)
• Minimum standard (2.2)

2.1Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check whether mixing requires a permit.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
93A and 93B	ga, respectivel y Nga	Residual flow from the shredding of end-of-life vehicles or parts thereof (car shredding waste).	This is the residual flow left over in the shredding of end-of-life vehicles or parts thereof, after recyclable fractions (such as metals and plastics) have been separated from the shredder material.

41For the definition of 'end-of-life vehicle', please refer to Annex 1 to the Environmental activities decree [Bal].

94A and 94B	ga, respectively Nga	Residual stream from shredding discarded electrical and electronic equipment or parts thereof and other metal-containing waste not falling under category 93.	This is the residual flow left in the shredding of other shredder waste, after recyclable fractions (such as metals and plastics) have been separated from the rescued material.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 'Keeping waste separate'].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

This plan includes the following specific provisions for shredder waste, which the competent authority should take into account, in derogation from the general assessment frameworks:

Cat. Bal	Allowing mixing in relation to the waste categories
93A or/and 93B 94A or/and 94B	Notwithstanding the [Waste Mixing Chapter], the competent authority can only grant a permit for the mixing of shredder waste falling within waste categories 93A, 93B, 94A or 94B as long as the processing of shredder waste according to the minimum standards remains possible. This means that the processing, which may involve mixing, must lead to: • recycling of metals present, • as much as possible recovery of the other components, where up to 5% of the input from the (first) shredder plant is landfilled as an inert residue.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for authorising the mixing of shredder waste.

2.2Minimum standard

The processing of shredder waste must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the processing of shredder waste:

Component flow	Waste	Minimum standard
a	Residual flow 'Vehicle shredder waste'	Sorting, post-separation and other forms of processing aimed at (cumulative): • recycling of metals present, • as much as possible recovery of the other components, • limiting landfilling to an inert residue only, and • limiting this inert residue to be landfilled to no more than 5% of the input from the first shredder facility. This means that an application for authorisation for a processing plant for automotive shredder waste must demonstrate that the process throughout the entire chain (i.e. from the first shredder to facilities where separated fractions from the shredder are processed) will not lead to residues exceeding the aforementioned 5 % of the original input.

b	Residual stream 'other shredder waste'	Sorting, post-separation and other forms of processing aimed at (cumulative): • recycling of metals present, • as much as possible recovery of the other components, • limiting landfilling to an inert residue only, and • limiting this inert residue to be landfilled to no more than 5% of the input from the first shredder facility. This means that an application for authorisation for a processing plant for other shredder waste must demonstrate that the process throughout the entire chain (i.e. from the first shredder to facilities where separated fractions of the shredder are processed) will not lead to more landfill residues than the aforementioned 5 % of the original input.

The above minimum standards apply to all shredder waste processors, not only those with facilities dedicated exclusively to the processing of shredder waste by third parties, but also to shredder waste operators who themselves process or intend to process all or part of the shredder waste.

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2].

Wastes containing certain SVHCs

SVHCs may be present in the waste. Both the legislation described and the assessment frameworks of [Chapter mengen van afvalstoffen] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether the transfer of shredder waste is permitted. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [SVHCs and other substances of concern] in this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Scope of the assessment framework, grounds and conditions for objection

The following assessment framework applies to all shredder waste sub-streams as specified in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for reuse	Due to the nature of the waste, not applicable.
(Interim recovery followed by) recycling and other recovery	If the degree of recovery does not justify the shipment. In any case, for the residual stream 'car shredding waste' and the residual stream 'other shredding waste', shipment will be refused if: • the non-inert fraction is landfilled; and/or
	• if more than 5% of the transferred waste stream is landfilled (grounds for objection 12(1)(b) and 12(1)(g) EVOA).

Disposal for which the shipment is *not* authorised	Specific provisions and grounds for objection
Incineration	This is because at least 95% of the material can be processed in higher value terms through recovery (the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
Other forms of (preliminary) disposal other than incineration as a form of disposal or dumping	If the processing results in a fraction to be landfilled; • of a non-inert fraction; and/or • in any event, this is a reason for refusing the transfer on the basis of national self-sufficiency for more than 5% of the transferred waste stream; and for transfers to the Netherlands on the basis of national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (objection ground Article 11(1)(a) and (b) EVOA)).
Landfill	Because of the higher quality processing possible; and • national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. Specific information is provided in [Section 6 ‘Waste or non-waste’].

4. Explanatory notes on the scope

This section explains the delineation of this plan, an overview of waste similar but covered by other plans, and Eural Codes associated with this plan.

This waste plan refers to the residual flow resulting from the shredding of metal-containing waste after specific mono-streams (at least metals) have been separated by the shredder. This residual stream is the ‘shredder waste’.

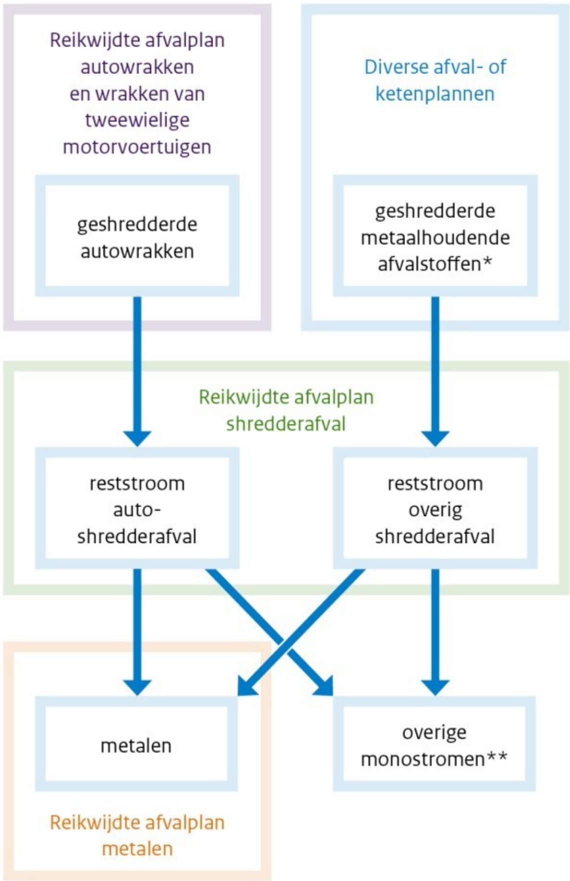
This shredder waste is produced by facilities that primarily shredder metal composite products. Metallic products include end-of-life vehicles, waste electrical and electronic equipment, welfare scrap (for example, bicycles, two-wheeled motor vehicles, prams, furniture) and lighter parts of industrial metal scrap. This waste plan distinguishes between the residual fraction resulting from the shredding of end-of-life vehicles (car shredding waste) and the residual fraction resulting from the shredding of the other metallic products (other shredding waste). The reason for this separation is the fact that specific recycling targets have been set for the treatment of end-of-life vehicles. Distinguishing between these two types of shredder waste allows for the setting of different minimum standards for these two waste streams, if needed, if the targets so require. This is further discussed in [Section 5.2 ‘Explanation of the minimum standard’].

Relationship with other waste or chain plans

Shredding or reduction of waste materials is also performed on non-metallic waste (e.g. in wood). A residual fraction may also be left, but this shredder material is outside the scope of this sector plan.

Metal-containing wastes that have not (yet) been shredded are under the scope of other waste plans. The figure below shows how the scope of the waste plan relates to shredder waste compared to other waste plans.

Figure 1 – Explanation of the demarcation in relation to other waste and chain plans



*Metaalhoudende afvalstromen bestaan uit o.a. geshredderede tweewielige motorvoertuigen, AEEA, overig metaalhoudend welvaartschroot en lichte delen van industrieel metaalschroot.

**Verwerken volgens de minimumstandaard van relevante afval- of ketenplannen. Indien de materialen niet onder een afval- of ketenplan vallen, moet de verwerking worden getoetst aan de afvalhiërarchie in het CMP.

The shredding process that generates the shredder waste

The bulk of the waste to be shredded is to be prepared. This is done, for example, through the separation of reusable, harmful and explosive components, products and materials/substances such as glass, rubber, plastics, pressurisers, CFCs and mercury-containing waste. The residual waste is shredded and consists of mixtures of metals, foam parts, glue and laminate compounds, textiles, plastics, wood, rubber, lacquer, cables, dust, road waste, etc.

The essence of the shredding process is to reduce input streams with a grinding mill, allowing a main separation between ferrous metal and other materials. Separation of other materials is generally carried out by magnetic separation, extraction and sieving techniques. After the vast majority of metals in particular have been separated (both ferrous and non-ferrous), a residual stream (the shredder waste) remains, which still needs to be further processed as indicated in this waste plan.

Improved selective dismantling of usable end-of-life components and other components and materials (such as glass, rubber and plastic), end-of-life vehicles, wealth and industrial scrap generates less shredder waste. The more components and materials are removed from the end-of-life vehicle or equipment before shredding for reuse or recycling, the less shredder waste will be generated and the less the stream will be shredder waste. See also the [Waste plan for end-of-life vehicles] and the [Waste plan for waste electrical and electronic equipment].

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
End-of-life vehicles and two-wheeled motor vehicles	[Waste plan for end-of-life vehicles]
Electrical and electronic equipment	[Waste plan for electrical and electronic equipment]
Ferrous and non-ferrous metals	[Metal waste plan]
Batteries and accumulators	[Waste plan batteries]
Other mono-flows from the processing/sorting of shredder waste	See other waste plans or the [waste hierarchy] as described in section 'guidance tools'.

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 191003*; 191004; 191005*; 191006.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for permitting the mixing of shredder waste. In the case of 'mixing', this is described in [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep shredder waste separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping industrial waste and hazardous waste separate *(general)*	Businesses must always keep 'vehicle shredder waste' separate and dispose of it separately, unless they have a mixing permit *(Article*). *3.195 and art. 3.196 Bal and 'mixing of waste' chapter*. The same applies to 'other shredder waste'. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.
Keeping separate during collection	A collector must always keep a shredder waste that is disposed of separately by waste category *(Article*). *1b. Waste Collection Decree)*. This applies both to shredder waste that is hazardous waste and to shredder waste that is not hazardous waste. No derogation is allowed.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.2 'Mixing of hazardous waste']
- [Section 4.2.4 'Mixing of POP-containing waste'] and/or [Section 4.2.3 'Mixing of waste containing PBT or vPvB substances or substances of 'equivalent care']
- [Section 4.2.5 'mixing prior to or during landfilling']

Check all review frameworks in the chapter to see if they are applicable to the mixing of shredder waste.

The essence of allowing shredder waste mixing is that processing in accordance with the minimum standard should remain possible after mixing. For shredder waste, this means that:

The competent authority may grant a permit for the mixing of shredder waste (waste category 93A, 93B, 94A or 94B) with each other, with other waste or non-waste, as long as the processing of such waste according to the minimum standards remains possible. This means that the processing, which may involve mixing, must lead to:

- recycling of metals present,
- as much as possible recovery of the other components,

where up to 5% of the input from the (first) shredder plant is landfilled as an inert residue. The mixing can only be authorised if the application for authorisation demonstrates that these conditions of the minimum standard are met.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Given the nature of the waste, reuse is not an option.
Preparing forre-use	Due to the nature of the waste, preparing for reuse is not an option.
Recycling	The processing of shredder waste should lead to the recycling of any metals present.
Other usefulapplication	Not allowed for shredder waste (as a whole), because metals must be separated for recycling. Other components of shredder waste must be recovered as much as possible according to the minimum standard.
Incineration as a formof disposal	‘Disposal’ is permitted for up to 5% of the input of a shredder because at least 95% of the shredder waste (including metal recycling) can be recovered and, for end-of-life vehicles, is required by the Decree on end-of-life vehicle management.
Landfill	Only the inert residue from the processing of shredder waste may be dumped in accordance with the minimum standard. This is also subject to the condition that it is limited to a maximum of 5% of the shredder material (including fractions already separated from the shredder).

5.2.1 General

This plan distinguishes between two types of shredder waste in the minimum standard:

- the residual flow from the shredding of end-of-life vehicles (car shredding waste) and
- the waste stream generated from the shredding of other metal-containing waste.

Different waste types may be subject to different recycling targets or different rates for maximum residue landfilling based on European or national frameworks.

In the CMP, the minimum standard for the two types of shredder waste is as yet the same.

5.2.2 Preparing for reuse

Due to the nature of the waste, preparing for reuse is not an option.

5.2.3 Recycling

Vehicle shredder waste

Dismantling companies first remove reusable components for end-of-life vehicles and all substances for which separation is required by law, in order to ensure environmentally sound treatment. The stripped end-of-life vehicles are then ground down into a small particle size in a shredder to mechanically separate the various materials.

The BAL includes general rules on the shredding of end-of-life vehicles (Article 4.431b of the Bal). First, 'directly recyclable scrap metal' has to be separated. The shredder company will therefore have to recover ferrous and non-ferrous metals as much as possible from the vehicle shredder waste. These steps are covered by the [Waste plan for end-of-life vehicles]. Secondly, other shredder waste materials should be 'recovered as much as possible'. The minimum standard of this waste plan is in line with that provision, whereby 'as much as possible' is in any case filled in as 'recycling of the metals still present' and as much as possible recovery of the remaining shredder waste.

The remaining fraction of automotive shredder waste (the residual stream) is therefore further sorted in the separation process of a post-shredder (PST) facility. Various modules are used to separate the metal scrap, minutiminerals, plastics and fibres from the low-metal automotive shredder waste. The aim is to maximise the possibility of recycling (especially metals). The PST facility is considered to be the best available processing option for the time being and is the basis for the minimum standard for the residual fraction of vehicle shredder waste in this waste plan. Any market economy operator who is able to comply with the minimum standard, whether or not in combination with other companies in the chain, is eligible for a licence.

The acceptance and processing system for end-of-life vehicles aims to achieve 95% recovery and 85% recycling (target in the Decree on end-of-life vehicle management). This objective is in line with the European objective in the End-of-Life Vehicles Directive. In order to achieve this objective, the industry has developed the post-shredder (PST) facility, which is able to meet these objectives. In practice, about 99% of vehicle shredder waste can be recovered in the Netherlands (RoyalHaskoning DHV, 2022). Recycling is not possible for about 1.3% of the original mass of end-of-life vehicles and the energy recovery option remains for this residue (RoyalHaskoning DHV, 2022). For more information on 'other recovery', see [Section 5.2.4].

Other shredder waste

Prior to the processing of 'other shredder waste', wealth scrap is shredded into a small particle size in large facilities. The purpose of processing is to recover the metals present. The metals are separated by magnets and roller blades, and then recycled. The non-metallic materials that can be sorted are processed through available recycling routes or otherwise recovered. This shredding is covered by different waste plans, depending on the type of welfare scrap metal produced. 'Other shredder waste' is the waste stream that is then covered by this waste plan.

Other shredder waste is waste electrical and electronic equipment. For this stream, the Waste Electrical and Electronic Equipment Regulationcontains provisions for components and recovery objectives to be separated. See the [Waste plan for electrical/electronic equipment] for more information.

This other shredder waste (the waste stream) is then to be further sorted for metal recycling and other fraction recovery. This is done in the separation process of a post-shredder (PST) facility. Several modules are used to separate the remaining metal residues, minutiminerals, plastics and fibres from the low-metal shredder waste. The PST facility is considered to be the best available processing option at this time, and forms the basis for the minimum standard for the residual fraction of other shredder waste in this waste plan.

The remaining fraction of shredder waste, with a particle size greater than 2 mm, is incinerated with energy recovery (e.g. in an incineration plant with R1 status). A total of at least 95% of other shredder waste must be recovered. For more information on 'other recovery', see [Section 5.2.4].

Previously, the minimum standard for other shredder waste consisted of recycling the metal fraction and incineration as a form of disposal of the other fractions. However, the study by (RoyalHaskoning DHV, 2022) found that not all fractions are suitable for incineration, requiring that a fraction be landfilled. The minimum standard has therefore been formulated in a way that is more in line with practice and is for the time being set equal to the minimum standard for the processing of vehicle shredder waste.

5.2.4 Other recovery

Integral incineration with energy recovery (as other recovery) of shredder waste is not permitted without first separating the metal fraction for recycling.

Integral incineration with energy recovery is allowed for the processing of the residue released from the PST plant after at least the metal is recovered from the shredder waste.

However, not all materials are suitable for incineration with energy recovery (e.g. in an R1 incineration plant). The following fractions are unsuitable because of the negative impact on the environmental hygiene quality of the axles (RoyalHaskoning DHV, 2022):

- Fine residues of less than 2 mm, including fibre, minerals and glass
- Residue from heavy materials such as rubber and plastics
- Contaminated residues (e.g. tar-containing materials).

These materials, which are not suitable for incineration with energy recovery and cannot be further sorted, may be landfilled. The landfilling of the inert residue cannot exceed 5% of the total input from the first shredder. This 5% also includes the deposit by third parties of (parts of) fractions deposited for further processing. For more information on landfilling, see [Section 5.2.6].

5.2.5 Incineration as a form of disposal

Shredder waste materials cannot be incinerated in their entirety, as the metals must first be recovered for recycling and at least 95% (of the end-of-life vehicle as a whole) must be recovered. The minimum standard allows max. 5% are disposed of, i.e. incinerated or landfilled. As indicated in the previous section, burning is not always an option.

5.2.6 Landfilling

Under the Landfills and Waste Dumping Prohibitions Decree(BSSA), Article 1(1), category 27, a dumping ban applies to 'shredder waste' and 'mixed partial streams or residues from the manual and mechanical processing of the streams of shredder waste'.

Landfilling of an inert residue

Nevertheless, dumping of an inert residue *exclusively* is permitted in the minimum standard. This is because for car shredder waste and other shredder waste, processing at a PST plant produces an inert residue, which is not suitable for recycling or incineration with energy recovery. This is the fraction with a particle size of less than 2 mm.

One condition is that no more than 5% of the input stream from the first shredder should be landfilled at any time. This 5% figure is calculated from the total input from the first shredder. This 5% is the total for the entire processing chain (i.e. from the first shredder to the processors where components or substreams of shredder waste are transferred to them). For this reason, the [Waste plan for end-of-life vehicles] and the [Waste plan for electrical and electronic equipment] state that control instructions must be included in a shredder facility's permit.

The use of guidance in general is described in section 2.4.2 'the minimum standard consists of several steps' of the [Guidance on the use of minimum standard].

Disposal of residues is only possible with a dumping ban exemption. For more information, see the [Guidance on dumping ban exemption].

5.3Substances of very high concern (SVHCs) and other substances of concern

SVHCs in the table below are known[42] to be present in shredder waste at concentrations above the concentration limits in [Table 1] of the 'SVHCs and other substances of concern' chapter. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 'Legislation to phase out and restrict use'] of the chapter 'SVHCs and other substances of concern'.

42Source: SGS Intron, 2019, SVHC in waste.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the webpage 'Addressing substances of very high concern' (IPLO) and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

In the case of a shredder waste mixed stream, the presence of SVHCs in incoming loads is unlikely to exceed the concentration value in the waste. Therefore, given the heterogeneity of the waste material, checking for the prevention of a quantity of different SVHCs above the concentration limit is not efficient.

However, SVHCs may be present above the concentration value in the shredding of specific waste streams. The table below provides a (non-exhaustive) list of SVHCs that may be present in shredder waste above the concentration limit value in [Table 1] of the 'SVHCs and other substances of concern' chapter. This is a snapshot of the available knowledge. New information may become available at any time, either through new information or

improved measurements but also due to changes in the use of care substances in raw materials and products.

SVHC	Regulations	Waste and description
Tris(2-chloroethyl) phosphate (TCEP)	• REACH Annex XIV (entry 13) • REACH Annex XVII (restriction 30)	Plastic particles and can be present in shredder waste from vehicle recycling. Used as flame retardant.
Tetrabromobisphenol A (TGDP-A)	REACH Candidate List	In shredder waste with a large proportion of plastic, mainly printed circuit boards and electronic components. Used as flame retardant in plastic.
Phthalates such as • bis(2-ethylhexyl) phthalate (DEHP) • dibutyl phthalate (DBP) • bis(2-ethylhexyl) phthalate (DEHP) • dibutyl phthalate (DBP) • benzyl butyl phthalate (BBP) • dihexyl phthalate (DHP) • di-n-pentyl phthalate (DPP) • 1,2-benzenedicarboxylic acid, diC7-11 branched and linear alkyl esters • N-pentyl-isopentylphthalate • Dicyclohexyl phthalate • N-pentyl-isopentylphthalate	• REACH Annex XIV (entry 4, 5, 6), 33, 35, 37, 38, 39, 45) • REACH Annex XVII (restriction 30, 51)	In shredder waste with a large proportion of plastic, in particular PVC.

Polychlorinated biphenyls (PCBs)	POPs Regulation	In shredder waste from old electrical products produced before 1985, particularly capacitors.

6. Explanatory note on cross-border transport

In addition to vehicle shredder waste and other shredder waste, sometimes mixed shredder waste is imported from abroad for processing in a post-shredder facility. Mixed shredder waste includes both automotive shredder waste and other shredder waste. This waste cannot be generated in the Netherlands, given the minimum standard, but can be generated abroad. This fraction should be processed in accordance with the minimum standard for other shredder waste (b). A maximum of 5% inert residue of the imported fraction may be landfilled. If more than 5% of the shredder waste created is to be landfilled, this is a reason for refusing the transfer to the Netherlands, or the fraction to be landfilled must be returned to the country of origin. See the conditions in [Section 4.3.1]. 'transfer for landfilling'] of the 'cross-border transport' section.

7. Other information

7.1Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment.

Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term 'waste' should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

Always waste

The materials covered in this waste plan are always waste. However, once processed, the waste status of the material may be re-examined. For example, if the demand for waste or non-waste is asked after sorting out any mono-streams, it must be assessed on the corresponding chain or waste plan of that material.

7.2Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to 'potentially recoverable critical materials'.

According to the report 'Recovery potential secondary critical raw materials based on waste plans in the LAP3' (TNO, 2023), shredder waste contains the following potentially recoverable critical materials: silicon, titanium, tungsten, antimonium, beryllium, bismuth, germanium, cobalt, lithium and light rare earth metals[43]. For the purpose of recovery, the report considers the waste to be promising. The study also looked at techniques to recover critical materials and where they are available within the EU. Waste processors can use this overview to make choices for developing techniques within the Netherlands or, for example, to cooperate with countries within the EU that have experience with the technique and/or are equipped with capacities to recover certain materials.

[Section 2.3.6 'Critical materials and high dignity'] of the CMP's 'Recycling of waste' chapter provides more information on critical materials in relation to waste treatment.

43The light rare earth metals (LZAM) are: cerium, lanthanum, praseodymium, neodymium, promethium, europium, gadolinium and samarium; ZZAM stands for Heavy Rare Earth metals: these are dysprosium, yttrium, terbium, holmium, erbium, thulium, ytterbium, yttrium and lutetium.

7.3BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

7.4Relevant background documents on the CMP website

The following documents and reports are available on the CMP website and link to the contents of this waste plan:

- RoyalHaskoning DHV (2022). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

The revision of the European Directive on End-of-Life Vehicles is currently ongoing. The European Commission has proposed a Circular Vehicles Regulation, which will repeal the End-of-Life Vehicles Directive. The Netherlands is committed to an ambitious Regulation. More circular business models, linking design issues to processing, higher mandatory levels of recycled material for certain materials and recycling efficiency are promoted (RoyalHaskoning DHV, 2022). This may lead to a revision of the End-of-Life Vehicles (Management) Decree in the future and consequently to a change in the minimum standard for the residual stream for ‘car shredding waste’ in this waste plan.

In addition, the evaluation of the EU Directive on ‘Waste of Electrical and Electronic Equipment’ (WEEE Directive) is currently ongoing. The latest amendment to the Directive stipulates that the European Commission will assess the need to revise the Directive by 31 December 2026. The revision of the WEEE Directive could also lead to changes in this plan in the future.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Stony waste plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

Status: Circular Materials Plan draft for public consultation

Sender: Ministry of Infrastructure and Water Management

Date: January 2025

Website: circulaire materials plan.nl

Stony waste plan

This waste plan provides the assessment framework to be taken into account by the competent authority when granting waste treatment permits and the cross-border transport of stony material not covered by any of the other waste or chain plans.

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of stony materials. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Future plans

Assessment frameworks

This section of the plan describes how companies should process stony materials, including the focus points. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

This plan applies only to stony waste that does not fall under any of the CMP's other chain or waste plans. The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
Stony material	• Masonry, tiles, roof gravel, stones, stone grit, etc., not adhered to by tar or bitumen, resulting from the construction, renovation and demolition of buildings, structures and roads. • Ballast gravel used on the track to keep sleepers in their position. • Waste rock released when breaking down industrial ovens or replacing oven stones during maintenance or renovation. Facing bricks are either baked stones or based concrete. • Formed construction materials/immobilisates which previously incorporate specific substances of very high concern (SVHCs) that should not be recovered under international legislation or the CMP assessment frameworks in [chapter SVHCs and other substances of concern] or [chapter immobilisate, filler or aggregate].
Stony fractions	Generated in mixed waste separation and sorting operations.
Stony production waste	e.g. from the ceramic industry.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below address the following aspects relevant to authorising the processing of stony materials:

- mixing permission (2.1)
- minimum standard (2.2)

2.1 Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check if mixing is a licence is required. In addition, the [chapter immobilisate, filler or aggregate] describes when an authorisation is required for the production of construction materials from waste materials.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
54	Nga	Stony material containing more than 50 mg/kg of PAHs that: • consists mainly of concrete and masonry, tiles, roof tiles, stones and stone grit, and ballast grit; • does not fall into any of the categories 40 to 53, 91 and 92; and • is not a hazardous waste material	Stony material containing only contaminants that can be removed by thermal or extractive cleaning.
55	Nga	Stony material containing not more than 50 mg/kg of PAHs that: • consists mainly of concrete and masonry, tiles, roof tiles, stones and stone grit, and ballast grit; • does not fall into any of the categories 40 to 53, 91 and 92; and • is not a hazardous waste material	Stony waste that can be recycled without prior cleaning of PAHs.
110	GA	Other hazardous waste that may be dumped pursuant to the Landfills andWaste Dumping Prohibitions Decreeor a minimum standard from Circular Materials Plan	• This includes moulded building materials/immobilisates for which the minimum standard is 'landfill' on the basis of this waste plan and which are hazardous waste. • Stony material containing more than 50 mg/kg of PAH10 that is hazardous waste.
111	Nga	Other non-hazardous waste that may be dumped pursuant to the Landfills andWaste Dumping Prohibitions Decreeor a minimum standard from Circular Materials Plan	The same applied for previous row with the difference that the waste is not hazardous.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 'Keeping waste separate'].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

For stony materials, this plan includes the following specific provisions, which should be taken into account by the competent authority, in derogation from the general assessment frameworks:

Cat. Bal	Allowing mixing in relation to the waste categories
54 or 110	By way of derogation from the [Mixing of waste] Chapter, the competent authority cannot authorise the reduction of the PAH10 concentration to 50 mg/kg dry matter for recycling by mixing or diluting.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of stony material.

2.2Minimum standard

The processing of stony material must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the processing of stony material:

Componen t flow	Waste	Minimum standard

a	PAH-poor stony material (PAH10 ≤ 50 mg/kg dry matter content)	Recycling.
b	PAH-rich stony material (PAH10 content > 50 mg/kg dry matter)	Thermal cleaning, where the PAH present is destroyed, and then the cleaned material is further processed in accordance with (a); or Extractive cleaning and further processing of the cleaned material from a residue and the resulting (PAH-rich) residue in d. Recycling of PAH-rich stony material into soil or building materials without prior separation or destruction of the PAH or heavy metals present is not permitted, even in combination with immobilisation.
c	Formed construction materials/immobilisates incorporating waste containing specific SVHCs that should not be recovered under current international legislation or the CMP assessment frameworks for [chapter SVHC and other substances of concern] or [chapter immobilisate, filler or aggregate].	Deposit at a suitable landfill. Processing of higher quality than the minimum standard is expressly prohibited, even in combination with immobilisation, unless the specific processing method ensures that these SVHCs are destroyed or removed from the waste for destruction or disposal.
d	residue from extractive cleaning as referred to in point (b).	Processing according to the minimum standard of [Waste plan residues].

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 'Explanation of the minimum standard'].

Wastes containing certain SVHCs

The above minimum standard takes into account the presence of PAHs, which may also contain other SVHCs. Both the legislation described and the assessment frameworks of [Chapter mengen van afvalstoffen] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether the transfer of stony material is permitted. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [Section 5.3 'SVHCs and other substances of concern'] of this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Relation with other waste plans

For the sub-streams in this waste plan where other waste plans are referred to for processing, no assessment framework for the transfer is included in this section. This is the case for substream d.

Scope of the assessment framework, grounds and conditions for objection

The assessment framework below applies to all stony material sub-streams as specified in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether there are specific

provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for reuse for component flow a	If the degree of recovery does not justify the shipment. For stony material, any landfilling is too high (grounds for objection 12(1)(b) and (n) EVOA (Article 12(1)(g) EVOA)).
Preparing for reuse for component flow for component flow b and c	Given the nature and/or composition of this waste, reuse is not a viable option.
(Interim recovery followed by) recycling for component stream a	If the degree of recovery does not justify the shipment. This is the case where the recycling rate is lower than that used for the processing of component stream a in the Netherlands. In addition, any landfilling of stony material is too high (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR)).
(Interim recovery followed by) recycling for component stream b	Unless separation or destruction of the PAHs or heavy metals present precedes recycling; and/or the extent of recovery does not justify shipment. This is the case for component stream (b) waste where a non-reasonable portion of the shipped waste is landfilled or otherwise disposed of. For stony material, any landfilling is too high (grounds for objection 12(1)(b) and (n) EVOA (Article 12(1)(g) EVOA)).

Other recovery for component flows (a) and (b)	This is because higher-quality processing in the form of recycling is possible (objection ground Article 12(1)(a), (b) and/or (n) EVOA (Article 12(1)(a) and, for shipments to the Netherlands, Article 12(1)(k) EVOA)). This prohibition also applies to transfers for backfilling or recovery in the deep substratum, as well as to the manufacture of mortars for backfilling operations.
All forms of (preliminary) recovery for component stream c	Because component stream c must not be recovered because of the presence of SVHCs, unless: • the specific processing method ensures the destruction of these SVHCs or their removal from the waste for destruction or disposal; and • a fair portion of the shipped waste is not yet landfilled or otherwise disposed of (objection ground 12(1)(b) and (i) EVOA (Article 12(1)(a) and (g) EVOA)).

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
Incineration as a form of disposal	Due to the nature of the waste, not applicable
Other forms of (preliminary) disposal other than incineration as a form of disposal or dumping for component streams a and b	This is because higher-quality processing in the form of recovery is possible (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
Other forms of (preliminary) disposal other than incineration as a form of disposal or dumping for component stream c	The need to prevent diffuse dispersal of the contaminants present; and/or • if the processing results in a fraction being landfilled due to national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions if a part is deposited
	(because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).
Landfill	Because of the higher quality processing possible, and/or • under national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. [Section 6.1 'Waste or non-waste'] provides specific information on this.

4. Explanatory notes on the scope

Stony waste (covered by this plan) consists mainly of masonry, tiles, ceramics, roof tiles, stones and stone grit, and is mainly released during construction and demolition activities of both private individuals and commercial construction. This is usually released in the form of rubble. In the case of large demolition projects, debris is broken on site through the use of a mobile crusher. In many cases, concrete is separated from bricks, etc. in advance, and disposed of separately and in a smaller size. Discarded rubble is then further sorted, sieved and broken down into recycling granulate at CDW processors.

In addition to the above, stony production waste from, for example, the ceramic industry is also included in this waste plan. Similar to ballast gravel, linings and stony fractions produced in separation and sorting operations of mixed waste streams. Stony materials can therefore comprise very different sub-streams. For example, if the mixture is
(e.g. old railway ballast beds containing both the ballast gravel and (contaminated) fine gravel and soil). However, moulded building materials and immobilisates are also covered.

In short, all stony waste is included unless explicitly covered by another plan such as concrete, asphalt, gypsum, aerated concrete or sieve sand (see table below).

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Stony asbestos-containing materials; • A material contains asbestos when the concentration of serpentine asbestos plus 10 times the concentration of amphibole asbestos exceeds 100 mg/kg of dry matter (determined according to a method set out in the Asbestos Products Regulation). • (If the asbestos concentration standard has been reached by mixing batches, the stony material containing asbestos should always be considered, even if this concentration falls under this standard)	[Waste plan asbestos-containing waste]
Asphalt (whether or not containing PAHs)	[Asphalt waste plan]
Concrete (rubble) and concrete products.	[Concrete chain plan]
Bottom ash and slag	[Waste plan ash WIPs] [Waste plan residues coal-fired power plants] [Waste plan for biomass energy recycling ash]
Aerated concrete	[Waste plan autoclaved aerated concrete]
Roof gravel, tar- or bitumen-bonded	[Waste plan roof waste]
Mixed CDW and mixed sorting fractions from the processing of CDW and domestic (unsorted) renovation waste resulting in	[Waste plan mixed construction and demolition waste]

composition of comparable industrial waste and of comparable residual (bulky) household waste	
Gypsum	[Gypsum waste plan]
Rubble	Processing according to the [waste hierarchy] as described in section 'guidance tools'.
Fine sand	[Waste plan fines]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 101314; 161103*; 161104; 161105*; 161106; 170102; 170103; 170106*; 170107; 170503*; 170504; 170507*; 170508; 191209; 191211*; 200202.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1 Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for allowing the mixing of stony materials. In the case of 'mixing', this is described in [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep stony material separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	At construction and demolition sites of construction works, stony materials that are released during demolition are subject to a legal obligation to keep them separate and separate *(Living Environment Buildings Decree, art. 7.24, 7.25 and 7.26)*. This also applies to mobile rubble crushers temporarily present at construction and demolition sites, processing stony fractions *(Environmental Structures Decree, Section 7.2 Mobile Break of Construction and Demolition Waste).* Mobile crushers must also not process building materials/immobilisers that are hazardous waste. Other construction and demolition sites (e.g. construction or demolition of roads or sports fields) are subject to the rules of the Bal as described in the following rows. In practice, rubble in construction and demolition sites is always kept separate and disposed of separately for economic reasons.
Keeping industrial waste and hazardous waste separate *(general)*	Businesses must keep stony waste separate and dispose of it separately from other waste unless they have a mixing permit *(Art.). 3.195 and art. 3.196 Bal and 'mixing of waste' chapter*. With some exceptions, businesses must also keep stony waste separate and dispose of other stony waste of the same waste category separately, unless a mixing permit has been granted (*Art.*). *3.195 and art. 3.196 Bal* and *waste mixing chapter*). These exceptions are set out in Article 3.185 Bal.
	[Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.

Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to 'disposers' before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. While CDW will often be involved, stony waste may also be released as business waste. Businesses must always keep this waste separate and dispose of it separately (*Art.*). *3.39 Bal in combination with 'Keeping corporate and hazardous waste separate'* chapter).
Keeping separate during collection	Stony waste collectors must always keep it separated from other waste *(Article*). *1b. Waste Collection Decree)*.
Recycling centre *(Bulky household) waste)*	'Mixed stony material, other than asphalt or gypsum' is one of the 18 waste materials for which the recycling centre must have a storage facility or make it known where individuals can turn if the recycling centre does not take up this waste itself *(Article*). *4.623 Bal).* [Chapter on separate collection of household waste] specifically addresses separation at the collection point.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.5 'mixing prior to or during landfilling']
- [Section 4.2.6 'Mixing and building materials'] and additionally [Section 3.2 'Use of waste as or in the production of building materials'] of Chapter 'immobilisate, filler or additive'

Always check with all the section's assessment frameworks whether they apply to the mixing of stony waste.

The essence of allowing the mixing of stony waste is that processing in accordance with the minimum standard should remain possible after mixing. For stony waste, this means that:

- The competent authority may authorise the mixing of PAH-rich stony waste within category 54 in cases of waste that will be treated in the same way in the same plant in thermal or extractive cleaning, destroying the PAHs and recycling the remaining material.
- Mixing stony waste with cement into building material (e.g. as filler or filler) or into immobilisate is not permitted for stony waste containing more than 50 mg/kg of PAHs (waste category 54 or 110).
- The mixing of stony waste, which itself does not meet the quality requirements for non-formed building materials of the Soil Quality Regulation 2022, with non-waste into building materials may be authorised if it meets the assessment framework of the [chapter immobilisate, filler or additive].
- In principle, the competent authority may authorise mixing for recycling of PAH-poor stony waste within category 55.
- The Authority cannot grant a permit to mix waste with PAH above the PAH10 limit (category 54 or 110) and below the PAH10 limit (category 55), unless the mixture is still stripped of PAH and then recycled.

The competent authority cannot permit mixing for the recovery of immobilisates and formed building materials, as described in minimum standard (c), with each other or with other waste materials. Mixing for recovery is only possible if these SVHCs are destroyed, separated out from the waste for destruction or disposal, or if they are used for filling salt mines.

- The competent authority may authorise the mixing of immobilisates and moulded building materials – as described in minimum standard (c) - and other waste to be landfilled within or between waste categories 110 and 111 for the purposes of dumping. The application for a mixing permit must comply with [Section 4.2.5 'Mixing prior to or during landfilling'].

5.2 Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Reuse does not imply waste treatment. [Section 6.1 ‘Waste or non-waste’] describes the possibilities for re-use if known.
Preparing forre-use	permitted under the minimum standard, except for construction materials/immobilisates in which SVHCs have been previously applied.
Recycling	Recycling in different forms is almost always possible, and therefore this is the minimum standard for stony material. The exception to this is stony material that is PAH-rich (PAH10>50 mg/kg), as it is necessary to go through a PAH removal step. Recycling cannot be automatically licensed even for both moulded building materials containing SVHCs and immobilisates.
Other usefulapplication	A foreseeable form of other recovery is the use of stony waste as filling for salt mines. This is only permitted for the above-mentioned formed construction materials containing SVHC and/or immobilisates and also for salt mines for which there is a backfill obligation or a backfill necessity.
Incineration as a formof disposal	No option for stony material.
Landfill	In principle, stony material is subject to a dumping ban. Dumping is only permitted for moulded building materials or immobilisates which previously incorporate SVHCs that should not be given useful application by legislation and the CMP assessment frameworks in [chapter SVHC and other substances of concern] and [chapter immobilisate, filler or aggregate]. This may be exempted from the dumping ban.

5.2.1 Preparing for reuse

Various moulded (still intact) building materials, such as roofing tiles, bricks and window sills, lend themselves very well for (preparation for) reuse. This practice is already common. Gravel can also be made perfectly suitable for reuse by simple cleaning. Preparation for reuse is permitted on the basis of the minimum standard.

However, this is not the minimum standard because there is no certain market for all the theoretically to be reused building materials or stony materials.

Reservations should be made for stony material (minimum standard c) incorporating specific SVHCs in the past. The applicable regulations determine whether these moulded building blocks can be placed back on the market.

5.2.2 Recycling

The minimum standard for the processing of stony waste is largely focused on recycling. The exceptions are described below. The following is the basis for the choice of the minimum standard described: stony waste and crushed rubble have been crushed into masonry granulate, mix granulate, concrete granulate or recycled gravel or crushed stone (sorting, crushing, cleaning) for decades. The [BRL2506] lists various raw materials that can/may contain the different granulates.

The granules used depend on the different types of stony waste used. Depending on its composition, mixed granulate may be used, inter alia, for the following purposes:

- concrete production (replacing sand and gravel) and asphalt;
- use as a building material, for example as part of mixed granulate used as raising and foundation materials in road construction;
- commitment to installing the necessary facilities in landfills (this is subject to conditions – see the [Landfill or recovery chapter]).

The use as a building material is currently the most common form of recycling of stony materials.

Stony material with specific contaminants

Stony materials that are PAH-rich must be cleaned before they can be recycled. This involves cleaning up to or below the limit of 50 mg/kg dry matter. This can be done by thermal cleaning as well as extractive cleaning. In extractive cleaning, a PAH-rich sludge that has to be disposed of after cleaning also remains to be disposed of.

Stony material is PAH-rich, if the PAH10 content is greater than 50 mg/kg dry matter. The accepted limit of 50 mg/kg of PAH10 is taken from the Soil Quality Regulation. In order to prevent PAH contamination away, the assessment framework [mixing of waste] of this waste plan explicitly emphasises that mixing batches should not allow reaching the 50 mg/kg dry matter limit.

The presence of certain contaminants in formed building materials or immobilisates also affects the desirability of recycling stony materials. Indeed, if contaminants such as SVHCs are present to a certain extent (for example, because contaminated waste has been used in the past to produce the formed construction materials), recycling is undesirable or even not allowed under provisions in the REACH Regulation, the POP Regulation or the [chapter SVHCs and other substances of concern] or [chapter immobilisate, filler or aggregate] in the CMP.

Mobile crusher deployment

To reduce stony material at demolition sites, mobile crushers may be used. The Living Environment Law (Structures) Decreecontains rules on the use of mobile crushers for the demolition of structures or roads, for a maximum period of three months and in the immediate vicinity of the construction works or the road where the waste to be broken is produced. Furthermore, the mobile breakage of concrete elements referred to in sub-stream c of the [minimum standard] for recovery is not permitted.

Use of (uncrushed) rubble as a building material

The 'Use of waste in/as a building material' page of the Information Point for the Living Environment (IPLO) provides an overview of the legislation that should be taken into account when using waste in/as a building material. It also states when the use of a waste as a building material is not subject to a permit requirement. If there is no permit requirement, this does not mean that the application is also permitted. This depends on whether the requirements of the Bal and Bbk are met. Specifically for stony construction and demolition waste, it is also indicated when uncrushed rubble may be used. In most cases, the condition is that the material is granulated or that it must be natural stone or concrete.

5.2.3 Other recovery

Only for pre-formed construction materials or immobilisates containing waste which cannot be recovered under the legislation in force or the assessment frameworks laid down in [chapter SVHC and other substances of concern] or [chapter immobilisate, filler or aggregate], other recovery is permitted under the minimum standard, subject to conditions.

5.2.4 Incineration as a form of disposal

This is not an option (or allowed) for any of the wastes.

5.2.5 Landfilling

Under the Landfills and Waste Dumping Prohibitions Decree(Bssa), Article 1(1), categories 29 and 34a, stony materials are in principle subject to a dumping ban in the Netherlands.

However, for formed construction materials or immobilisates which incorporate waste materials that must not be recovered in accordance with the legislation in force or the assessment frameworks for [chapter SVHC and other substances of concern] or [chapter immobilisate, filler or aggregate], the minimum standard is dumping. The competent authority may grant an exemption from the landfill of this waste.

For more information, see the [Guidance on dumping ban exemption].

5.3Substances of very high concern (SVHCs) and other substances of concern

SVHCs in the table below are known[44] to be present in stony materials in concentrations above the concentration limits in [Table 1] in the chapter 'SVHCs and other substances of concern'. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

44Source: SGS Intron, 2019, SVHC in waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 'Legislation to phase out and restrict use'] of the chapter 'SVHCs and other substances of concern'.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the 'Addressing Substances of Very High Concern' (IPLO) page and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

In moulded building materials/immobilisers specific substances of very high concern (SVHCs) may have been incorporated in the past through used surcharge or fillers. These stony materials are subject to a specific minimum standard.

The table below provides a (non-exhaustive) list of SVHCs that may be present in stony materials in excess of the concentration limit values in [Table 1] in the chapter 'SVHCs and other substances of concern'. This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

SVHC	Regulations	Waste and description
Polycyclic aromatic hydrocarbons (PAHs)	REACH Annex XVII (restriction 50)	PAHs can be present in: • specific batches of debris/recycling granulate from the demolition of chimneys, fireplaces, burned buildings, etc. (soot); • lots of tar-containing roofing waste or asphalt; • ballast gravel.
Asbestos fibres	REACH Annex XVII (Restriction 6)	Demolition sites must carry out an asbestos inventory in accordance with current legislation and remediate in case of asbestos found. (Other) Stony material therefore no longer contains asbestos in theory. However, if asbestos contamination is nevertheless detected when checking incoming loads, the whole batch must be considered to be asbestos-containing waste and processed in accordance with the minimum standard set out in [Waste plan for asbestos-containing waste]. This check should be part of the acceptance and processing policy of sorting companies.

6. Other information

6.1Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term ‘waste’ should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

For stony material, here is a number of specific points for attention in the assessment of waste or non-waste. These points do not describe the full assessment framework.

Always waste sub-stream

Legislation may require a holder to discard stony material. There are formed building materials and immobilisates in which waste has been used in the past with specific contaminants which should no longer be placed on the market. In that case, the material is waste, regardless of the behaviour and intentions of the holder.

Reuse

In order to determine whether there is reuse or waste, it is important to establish the holder’s intention with the stony material. If a holder discards, wants to discard, or is required to discard, the stony material, this is waste. If the holder wishes to resell shaped construction products suitable for second-hand use (such as paving stones, garden clinker and roof tiles), this may be an indication that they are not waste but are reused. For example, offering used roofing tiles through a second-hand sale website or through recycling hubs for used building materials. There are more factors that will determine whether this reuse is possible or desirable. For example, the suitability of the stony material for reuse should be considered. In addition, there must be a high degree of certainty that the stony material can be sold again. The assessment of whether a material is waste or non-waste will require a case-by-case assessment of the waste status of the material, based on all the facts and circumstances of that case.

Preparing for reuse

If a holder discards or wants or is required to discard the stony material, this is waste. The recipient then determines the waste treatment that can be used, in accordance with laws, regulations and policies, including those contained in this CMP. If, after simple operations, the product can be put back on the market, it is prepared for reuse. Examples of these operations are checking, repairing or simply cleaning. The assessment of preparation for re-use will require a case-by-case assessment based on all the facts and circumstances of each case. Once the preparation for re-use is completed, an assessment of end-of-waste status can be made on the basis of the conditions set out in Article 1.1(6) Environmental Management Actand [Chapter on waste or non-waste].

Recycling granulate (end-of-waste regime)

For recycling granulate, the Dutch End of Waste Status Determination Regulation-ofRecycling Granulateis in force, which lays down criteria determining when recycling granulate ceases to be classified as waste. All granules (granulated) of processed stony waste material are included in the scope of the PVD. Recycling granulate that meets the criteria of the scheme ceases to be waste.

This scheme is the assessment framework to determine whether recycling granulate from processed stony material is waste. Waste status assessments for the granules of stony material on other grounds are not permitted.

Non-waste on the market

In all cases, when stony material is placed on the market as non-waste (either directly or after recovery or not), it must comply with the relevant product regulations as a minimum. These include, for example, REACH, the POPs Regulation, the Living Environment Law (Activities) Decree, the Living Environment Law (Structures) Decree and the Soil Quality Decree.

6.2Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to ‘potentially recoverable critical materials’.

Stony materials are not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report ‘Recovery potential secondary critical raw materials based on waste plans in the LAP3’ (TNO, 2023).

[Section 2.3.6 ‘Critical materials and high dignity’] of the CMP’s ‘Recycling of waste’ chapter provides more information on critical materials in relation to waste treatment.

6.3BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] presents the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

6.4Mention of source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022a). *Concretizing conditions that prevent recycling as aminimum standard*.
- RoyalHaskoning DHV (2022b). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

This waste plan includes several stony waste types with their own problems and possibilities. Currently, the minimum standard does not distinguish between, for example, roofing tiles, tiling, brick, etc. Differentiating minimum standards according to specific stony waste could offer potential for high-quality recycling.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Packaging waste plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the Tools section.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

Status: Circular Materials Plan draft for public consultation

Sender: Ministry of Infrastructure and Water Management

Date: January 2025

Website: circulaire materials plan.nl

Packaging waste plan

This waste plan provides the assessment framework that competent authorities should take into account when granting waste treatment and cross-border packaging permits.

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of [waste]. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Future plans

Assessment frameworks

This section of the plan describes how companies should handle packaging, and the focus on it. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
Packaging collected separately or obtained by post-separation that is empty, emptied, scraped or scraped.	These are packaging made of various materials such as glass, cardboard, plastics, metal and laminate. These include: • packaging separately collected from households and businesses in various streams. • containers of e.g. misleads or over-the-date products from the food industry or from retail that have been emptied of their contents. • packaging used for paint, glue, sealant, resin or other hazardous substances, which has been removed or the contents of which have been completely hardened.
Packaging waste containing or contaminated by residues of dangerous substances. This packaging is offered and collected separately from households and businesses.	Packaging waste containing or contaminated with residues of paint, glue, kit or resin. These are mainly cans, aerosols and kittens. Packaging waste from other hazardous substances that contains residues or is contaminated with them. This can cover all types of packaging including aerosols.
Residues arising from the type of separation of collected or post-separated packaging waste.	This is the residual flow left after the separation steps.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below address the following aspects that are relevant for authorising the processing of packaging:

- mixing permission (2.1)
- minimum standard (2.2)

2.1 Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check whether mixing requires a permit.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
20	Nga	Non-impregnated wooden packaging	Empty wooden boxes, wine crashes and wooden (transport) pallets.
22	Nga	Mixed plastic waste, including mixtures of plastics and rubber, or batches of thermoplastics that are not hazardous waste, except for: • batches consisting solely or mainly of expanded polystyrene foam (category 31), • batches consisting solely or mainly of rubber (category 112); • plastic waste classified as hazardous waste due to the presence of plasticisers, certain pigments or other additives (category 112); and • plastic laminate packaging (category 112); and • thermosetting plastics, elastomers and biodegradable plastics (category 112)	Plastic packagings of individuals and businesses, together with plastic packagings of paint, glue, kit or resin which are shaking, scraping or scraping. Both source separated and obtained from post-separation of e.g. PMD fractions or residual waste.
24	Nga	Metals	Metal packaging such as cans, cans of canned goods and metal cans of paint, glue, kit or resin that are shaking, scraping or scraping. Both source-segregated and derived from post-separation.
26	Nga	Paper and cardboard, except undeveloped photo paper	Paper and cardboard packaging, often collected simultaneously with other paper and cardboard.
28	Nga	Textiles, excluding carpet	Packaging of textiles.
31	Nga	Expanded polystyrene foam (EPS) with an HBCDD concentration lower than 500 mg/kg	Protective materials that are part of packaging of electronics. This is collected separately at collection points.
33	GA	Packaging of paints, adhesives, sealants and resins that have been contaminated with residues that have not fully cured and that are hazardous waste materials	This refers to packaging made of paint, glue, kit or resin, containing residues of which the content must be indicated as hazardous. Unless the packaging is shaken, scraped or scraped. This will be classified in another category.
34	Nga	Container glass	Batches of container glass collected through the container and from businesses. This concerns only glass packaging such as jars and bottles.
112A	GA	Other hazardous waste that may not be disposed of in a landfill in accordance with the Landfills and Waste Dumping Prohibitions Decree or a minimum standard of circular Materials Plan	• Separately collected packaging of hazardous substances (other than paints, adhesives, sealants or resins) containing residues of the contents. • Aerosol dispensers.

112B	Nga	Other non-hazardous waste that may not be dumped pursuant to the Landfills and Waste Dumping Prohibitions Decree [Besluit stortplaatsen en stortverboden afvalstoffen] or a minimum standard in circular Materials Plan	This category includes waste that does not have its own waste category: • Beverage cartons, mixed plastics, metal and beverage cartons (PMD). • Other mixtures of empty packaging from individuals and businesses. • Residue from processing of mixed packaging waste.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 ‘Keeping waste separate’].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

This plan contains the following specific provisions for packaging, which the Authority must take into account in derogation from the general assessment frameworks:

Cat. Bal	Allowing mixing in relation to the waste categories
112B	By way of derogation from the [Waste Mixing Chapter], the competent authority may only authorise the mixing of beverage cartons, mixed plastic, metal and beverage cartons (PMD) and/or other mixtures of empty packaging with other non-hazardous waste within waste category 112B if the different types of packaging are sorted for processing in accordance with minimum standards a and b of [Section 2.2], unless the packaging waste is too contaminated or contaminated.
112A and/or 112B	By way of derogation from the [waste mixing chapter], for mixing aerosols with other waste falling within waste category 112A and/or 112B, the competent authority can only grant a permit if the metals are recycled.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of packaging.

2.2Minimum standard

The processing of packaging must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases, such as [calamities] or the presence of certain SVHCs. See also the [Guidance document on minimum standard in the granting of permits].

The following minimum standards apply to the processing of packaging:

Component flow	Waste	Minimum standard
a	Separately collected/delivered *empty* packaging from private individuals and businesses by type. Empty packaging is packaging that is shaking, scraping or scraping.	Processing in accordance with the relevant minimum standards: • Plastics: [Plastics waste plan] • Metals: [Metal waste plan] • Glass: [Glass waste plan] • Paper/cardboard: [Paper chain plan] • Wood: [Wood chain plan] • Textiles: [Textile chain plan] • EPS: [EPS waste plan] • Beverage cartons: processing according to minimum standard f. • Packaging containing residual contents (see further under c. and d.) and • Aerosol dispensers: processing according to minimum standard (e).

b	Empty *empty* packaging of individual and company types not separately collected/delivered	Sorting with the aim of dividing into the different types of packaging for the purpose of processing according to the respective minimum standards (see a.). Processing of a residual residue in accordance with g. For packaging waste for which recycling is not possible, e.g. because it is too heavily contaminated or contaminated, the minimum standard is 'other recovery' (e.g. primary use as fuel).
c	Separate collected/delivered packaging containing residues of adhesives, paints, sealants or resins that are not fully cured.	Other recovery in the form of 'primary use as fuel' in a plant where metals are recovered from the residues for recycling (e.g. R1AVIs).
d	Separately collected packaging of hazardous substances (other than paints, adhesives, sealants or resins) containing residues of the contents.	Incineration as a form of disposal.
e	Aerosol dispensers	Recycle the metals. Aerosol dispensers may also be incinerated in a plant that ensures that the metals from the residues are recovered for recycling (e.g. WIPs).
f	Beverage cartons (fraction from post-separation)	Recycle. For beverage cartons for which recycling is not possible, for example because it is too heavily contaminated or contaminated, the minimum standard is 'other recovery' (e.g. primary use as fuel).
g	Residue from sorting of batches of mixed packaging referred to under b.	Other recovery in the form of primary use as fuel in a plant where metals are recovered from the residues for recycling (e.g. R1 incineration plants).

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 'Explanation of the minimum standard'].

Wastes containing certain SVHCs

SVHCs may be present in the waste. Both the legislation described and the assessment frameworks of [Chapter mengen van afvalstoffen] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing the authorisation of the transfer of packaging. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term ‘degree of recovery’ is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase ‘any landfilling or other disposal’. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [Section 5.3 ‘SVHCs and other substances of concern’] of this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Relation with other waste plans

For the sub-streams in this waste plan where other waste plans are referred to for processing, no assessment framework for the transfer is included in this section. This is the case for sub-stream a.

Scope of the assessment framework, grounds and conditions for objection

The assessment framework below applies to all packaging component streams as indicated in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. ‘prohibitions’] of the ‘cross-border transport’ section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to ‘transfer for recovery’ (Article 12 EVOA). The second table contains the grounds for objection related to ‘transfer for disposal’ (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for reuse for component flow	If the degree of recovery does not justify the shipment. For packaging, any landfilling is too high (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR)).
(Interim recovery followed by) recycling for component stream b	If the degree of recovery does not justify the shipment. This is the case where the recycling rate is lower than what is customary for the processing of the waste in the Netherlands. In addition, any landfilling is too much (grounds for objection 12(1)(b) and 12(1)(g) EVOA).
(Interim recovery followed by) recycling for component stream c, d, e, f, g	If the degree of recovery does not justify the shipment. For sub-streams c, e, f and g, any landfilling is too much (grounds for objection 12(1)(b) and iEVOA (Article 12(1)(g) EVOA)).

Other recovery for component flows (b) and (f)	This is because higher-quality post-sorting processing is possible unless: • the notification shows that recycling is not technically possible; and • some of the shipped waste is not yet landfilled. (ground for objection Article 12(1)(a), (b) and/or (e) and (i) EVOA (Article 12(1)(a) and (g) and, for transfers to the Netherlands, Article 12(1)(k) EVOA)).
Other recovery for component flows c, e and g	Unless it is a form of recovery in which the metals are recovered for recycling. (ground for objection Article 12(1)(a), (b) and/or (n) EVOA (Article 12(1)(a) and, for transfers to the Netherlands, Article 12(1)(k) EVOA)).
Other recovery for component stream d	If the degree of recovery does not justify the shipment. For sub-stream d, any landfilling is too much (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR)).

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
All forms of (preliminary) disposal except landfilling for substream b, c, e, f and g	This is due to the possibility of higher quality processing in the form of recovery. The exception is for aerosol dispensers, where incineration as a form of disposal is allowed if the metals are recovered from the residues from incineration for recycling (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (objection ground Article 11(1)(a) EVOA)).
Other forms of (preliminary) disposal other than incineration as a form of disposal or dumping for component stream d	If the processing results in a fraction to be landfilled due to national self-sufficiency; and in the case of transfer to the Netherlands due to national legal provisions, if a part is landfilled (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (objection ground Article 11(1)(a) and (b) EVOA)).
Landfill	Because of the higher quality processing possible, and/or • under national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. Specific information is provided in [Section 7 ‘Waste or non-waste’].

4. Explanatory notes on the scope

This plan concerns packaging. Packaging consists of, among other things, paper/cardboard, plastic, wood (including wooden pallets), metal or glass, or laminate such as in beverage cartons.

Please note [for participation on the draft CMP]: This plan is a compilation of three sectoral plans from LAP3: sectoral plan 41 ‘General packaging’, 42 ‘Packaging with paint, glue, kit or resin’ and sectoral plan 43 ‘Packaging with other hazardous substances’.

Shaking, carving, or scraping

To distinguish packaging made of adhesives, paints, resins or sealants that are 'hazardous waste' or not, the principle 'shake, shelf or shrub' is used.
Packaging that is 'empty' is considered non-hazardous waste because it consists mainly of the packaging material itself. However, this is only an indication. In principle, even small quantities of raisined or cured paint, glue, resin or kit waste can make it a hazardous waste material. The distinction between hazardous and non-hazardous waste is determined by the EURAL and its concentration limits.

Before feasibility, the waste plan includes the term 'shake, scrape and scrape' to indicate whether or not the packaging made of paint, glue, resin or sealant is hazardous waste.

Specific details for packaging of paper and cardboard, wood and EPS

In principle, paper and cardboard packaging waste are covered by the Packaging Waste Plan. As paper and cardboard packaging are usually collected mixed with other paper and cardboard, the [Chain plan for paper and cardboard] applies to the processing. Both plans have the same minimum standard for paper and cardboard, i.e. recycling.

The minimum standard for A and B wood and wood packaging is different. There is therefore a separate waste category for wooden packaging. The processing of kept separate wooden packaging is covered by the [Wood chain plan].

Packaging of paint, glue, kit or resin

Wastes from the application of paints, lacquers, stains and other similar liquid and paste agents – which therefore also includes packaging – may also be included in KCA/KGA, but are covered in this waste plan.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Released batches of packaged commercial waste, mash and 'over-the-date' material that have not yet reached the intended end user.	See [Residual waste plan]

Batches of packaged production waste released, batches of material ‘over-the-date’ material that have not yet reached the intended end user.	See [Waste plan process-dependent industrial waste]
Waste paper and cardboard collected separately.	See [Paper and paperboard chain plan]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 150101; 150102; 150103; 150104; 150105; 150106; 150107; 150109; 150110*; 150111*; 200127*; 200128.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this waste plan determines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 ‘Mixing permission’] sets out the assessment framework for allowing the mixing of [waste]. In the case of ‘mixing’, this is described in [Section 4.1 ‘Definition of mixing’] of the ‘waste mixing’ chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep packaging separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that ‘mixing’ is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	At construction and demolition sites of construction works, the packaging of hazardous waste is subject to a legal obligation to keep it separate and to dispose of packaging released during the actual performance of construction and demolition works on construction works *(Art.). 7.24, 7.25 and 7.26 Environmental Structures Decree)*. Non-empty packaging from paint, glue, kit or resin or packaging from other hazardous substances used in construction and renovation are hazardous waste.
Keeping industrial waste and hazardous waste separate *(general)*	Companies must keep separate packages of each type and dispose of them separately from other waste unless they have a mixing permit *(Art.). 3.195 and art. 3.196 Bal and ‘mixing of waste’ chapter*. This also applies to separately stored batches of mixed packaging waste. With some exceptions to the Bal (Article 3.185) companies must also keep packaging waste separate and separate from packaging waste of the same category and from non-waste, unless a mixing permit has been granted (*Art.*) *3.195 and art. 3.196 Bal*). [Waste mixing chapter] of the CMP and [Section 2.1 ‘Mixing permission’] of this waste plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to ‘disposers’ before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Packaging waste which is hazardous waste must always be kept separate and delivered separately by a company *(Art.). 3.39 Bal).*

	Businesses must keep other containers separate and dispose of them separately if required by the CMP*(Art. 3.39 Ball in combination with [chapter on keeping business waste and hazardous waste separate])*. The CMP has provisions on keeping the following separate: • wooden packaging (together with other A and B wood); • glass packaging; • plastic films; and • paper and cardboard packaging (together with other paper and cardboard). [section on keeping corporate and hazardous waste separate] describes for which businesses and in which situation the above packaging must be kept separate. A company that still wants to mix packaging that it is required to keep separate with other waste will need a permit. [Thirty-one mixing of wastes] of the CMP and [Section 2.1] of this waste plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep packaging waste separately collected by waste category *(Art.) 1b. Waste Collection Decree)*. No derogation is allowed. Certain packaging containing residues of paint, glue, kit or resin and packaging containing other hazardous substances may also require a collection permit. According to the Waste Collection Decree, waste resulting from the application of paints, varnishes, stains and other similar liquid and paste substances may, for a quantity not exceeding 200 kg per waste material per delivery, only be collected by a holder of a waste collection permit. These are the holders of a KGA collection permit.
Recycling centre *(Bulky household) waste)*	EPS (expanded polystyrene foam) is one of the 18 wastes for which the waste collection point must have storage facilities or must indicate where individuals can go if the waste collection point does not itself consume such waste *(Article*). *4.623 Bal)*. For EPS, the competent authority may issue a specific requirement authorising the collection point not to have a separate collection facility, but to store it as a smart mixture. Conditions include that it is impossible to have a separate facility for all 18 wastes and that the same level of waste separation is achieved through post-separation or other measures. In any case, EPS must not be mixed with the residual container. See [Chapter on separate collection of household waste].
Municipal collection *(household waste)*	Municipalities are required to collect paper, textiles, metal, plastic, glass and hazardous waste separately from households. For metal, plastic and glass packaging, there are possibilities for post-separation if there is no detrimental impact on the quality and quantity of recycling or reuse compared with separation at the source. [Chapter on separate collection of household waste] sets out the obligations of municipalities.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.2 'Mixing of hazardous waste']
- [Section 4.2.4 'Mixing of POP-containing waste'] and/or [Section 4.2.3 'Mixing of waste containing PBT or vPvB substances or substances of 'equivalent care']

Always check with all the section's assessment frameworks whether they apply to the mixing of packaging.

The essence of allowing the mixing of packaging is that processing in accordance with the minimum standard should remain possible after mixing. For packaging, this means that:

- Empty packaging of different material types cannot be mixed, as different minimum standards apply to this packaging.
- Non-empty packaging containing residues of glue, paint, kit or resin (waste category 33), non-empty packaging containing other hazardous substances (waste category 112A) and non-recyclable, mixtures of empty packaging and sorting residue (waste category 112B) may mix a

business if the mixture is deposited for primary use as fuel (as a form of recovery) in a plant where metals are recovered for recycling from the residues. To mix non-empty packaging containing hazardous substances, with the exception of aerosol dispensers, of waste category 112A with waste category 112B for higher quality treatment, the competent authority can only grant a permit if the hazardous substances present are broken down, removed or separated (to an extent that the remaining concentration is below the hazardous waste limit) at the time of processing.

- In addition, by way of derogation from the [Waste Mixing Chapter], the mixing of metal aerosol cans with other wastes within waste category 112A and/or 112B can only be authorised by the competent authority if the metals are recycled.
- By way of derogation from the [Waste Mixing Chapter], the competent authority can only authorise mixed plastic, metal and beverage cartons (PMD) packaging and/or other mixtures of empty packaging with other non-hazardous waste within waste category 112B if the different types of packaging are sorted for processing in accordance with minimum standards a and b of [Section 2.2]. By way of derogation, beverage cartons and mixed empty packaging may be mixed within waste category 112B to dispose of the mixture for ‘other recovery’ (e.g. primary use as fuel) if the company has demonstrated that packaging cannot be recycled before mixing.
- The mixing of separately collected plastic packaging and mixed plastic packaging within waste category 22 can only be authorised by the competent authority if it is sorted or otherwise processed according to the minimum standards of the [Waste plan plastics].

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Reuse does not imply waste treatment. [Section 7.1] describes the possibilities for re-use if known.
Preparing forre-use	If packaging is suitable, preparation for reuse on the basis of the minimum standard is permitted
Recycling	Mixed packaging waste (such as PMD) should be sorted by species to maximise the recycling of materials. Packaging that contains residues of glue, paint, kit or resin or aerosol canisters shall be processed in a manner that ensures the recovery of any metals present for recycling. The processing of aerosols should also be aimed at recycling the metal.
Other usefulapplication	Packaging containing residues of paint, glue, kit or resin and aerosol can be used as a fuel, e.g. in an incineration plant under conditions that thus metals are recovered from the residues.
Incineration as a formof disposal	Only batches of packaging containing other hazardous waste may be incinerated as a form of disposal without the need for metals recovery or energy utilisation.
Landfill	All packaging is subject to a dumping ban.

5.2.1 Preparing for reuse

Preparation for reuse is permitted on the basis of the minimum standard.

5.2.2 Recycling

The minimum standards set in this plan aim to ensure that as much packaging waste as possible is processed in the highest quality possible way. As packaging waste is generated by households as a mixed PMD stream, the minimum standard requires, first of all, that this packaging waste is sorted by type.

Sorted metal, plastic and beverage cartons are then further processed according to this plan (beverage cartons) or according to the minimum standards of their respective waste or chain plans (metal, plastic, paper/cardboard, glass and wood). In this process, processing is focused on recycling. The same applies to waste collection polystyrene (EPS packaging) and separately collected glass or paper and cardboard. After separate collection or sorting, these are processed according to the respective waste or chain plans with the aim of recycling.

For a number of types of packaging, the minimum standard is set out in this waste plan:

- For beverage cartons, the minimum standard is recycling.
- Aerosol dispensers and non-empty packaging made of paint, glue, kit or resin must be processed in such a way that the metals can also be recovered for recycling. This can also be done through incineration in a plant where these metals from incineration ashes are recovered for recycling (see further under 'other recovery' and 'incineration as a form of disposal').

Non-recyclable packaging

Only where mixed packaging or sorted beverage cartons are really not recyclable, for example because the waste is too heavily contaminated or contaminated, may the batches be recovered in a more detailed way [see next section 5.2.3 'Other recovery'.]

From the report of RoyalHaskoning DHV 'Examination of the extent of recovery' dated 1 December 2022, it appears that some packaging materials are not recyclable if they are not separated at source. In addition, some packaging materials are designed to be non-recyclable. The report identifies the following possible causes (not exhaustive) of non-recyclability of packaging materials:

- packaging contaminated with other substances that impede recycling;
- packaging is a combination of materials that cannot be recycled together and cannot be mechanically separated;
- Packaging is not pure, but contains, for example, fillers, coatings, pigments, plasticisers, flame retardants that prevent recycling.
- packaging does not have its own recycling route (e.g. different plastic type);
- packaging consists of a type of plastic that is not recyclable (e.g. black in colour);
- glass packaging that is not white, green or brown;
- packaging is of a size that makes it economically unattractive to arrange the separation equipment on it (e.g. plastic packaging smaller than 7 cm in post-separation).

5.2.3 Other recovery

Separately collected/delivered packaging containing residues of glue, paint, kit or resin which are not fully cured has a high calorific value and therefore the minimum standard is 'other recovery' in the form of main use as fuel. As indicated above in the section 'Recycling', it must be ensured that the metals are recovered during processing. Therefore, linking this packaging to an R1 plant from which the metals from the residues are recovered meets the minimum standard (e.g. R1AVIs).

For batches of packaging waste that are not yet separated by type, other recovery (e.g. primary use as fuel) is only permitted if it is proven that sorting out to obtain recyclable fractions is not possible. This also applies to the processing of beverage cartons that are not suitable for recycling.

Processors who wish to process these batches (perhaps especially AVIs) should include in their acceptance policy that they will accept these waste only if it is demonstrated that the waste is not suitable for sorting/recycling. The acceptance policy should specify how this is to be demonstrated by companies and how it is administered by the processor. In doing so, the processor bases itself on the assessment framework of Section 2.4.1 'the minimum standard contains exceptions' of the [Guide to use of minimum standard].

5.2.4 Incineration as a form of disposal

Only separately collected packaging waste from dangerous substances that still contains residues of the contents (other than paint, glue, kit or resin) may be incinerated as a form of removal.

Aerosol dispensers may also be incinerated, provided that this is done in an incineration plant from which the metals are recovered from the incineration ashes (e.g. an incineration plant).

Incineration on the basis of the minimum standard is not permitted for all other packaging waste.

5.2.5 Landfilling

All packaging is subject to a dumping ban pursuant to the Landfills andWaste Dumping Prohibitions Decree(Bssa), Article 1(1):

- category 43a: packaging, other than that specified in 43 b or c;
- category 43b: packaging containing paint, glue, kit or resin;

- category 43c: packaging of other hazardous substances.

More information on the dumping bans can be found in [Preparing and implementing a dumping ban chapter].

5.3Substances of very high concern (SVHCs) and other substances of concern

The SVHCs in the table below are known[45] to be present in packaging in concentrations above the concentration limits in [Table 1] of the 'SVHCs and other substances of concern' chapter]. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 'Legislation to phase out and restrict use'] of the chapter 'SVHCs and other substances of concern'.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Authorisation Guidance]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the 'Addressing Substances of Very High Concern' (IPLO) web page and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

The tables below provide a (non-exhaustive) list of SVHCs that may be present in packaging above the concentration limit in [Table 1] of the chapter 'SVHCs and other substances of concern'. This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

In the case of a mixed stream such as packaging material of household origin, the presence of SVHCs above the concentration limit in [Table 1] in the 'SVHC and other substances of concern' chapter is unlikely, given the heterogeneity. Therefore, checking whether a quantity of several SVHCs above the concentration limit is not efficient.

Batches of packaging from industrial sectors that produce similar products or that originate from companies disposing of packaging waste of the same composition may contain SVHCs above the concentration limit value in [Table 1] in the chapter 'SVHCs and other substances of concern'. The table below provides a (non-exhaustive) list of SVHCs that may be present in batches of industrial packaging made of plastic, textile or paper that can be classified as shaking, scraping or scraping.

45Source: SGS Intron, 2019, SVHC in waste.

SVHC	Regulations	Waste and description
Polybrominated biphenyls (PBB)	REACH Annex XVII (restriction 8)	In packaging made of plastics and textiles. Used as flame retardant
4,4'-oxydianiline	REACH Annex XVII (restriction 28, 29)	In packaging made of plastics. Used as flame retardant.
Boron oxide	REACH Annex XVII (restriction 30)	In packaging made of plastics. Used as flame retardant.
Phthalates such as: • bis(2-ethylhexyl) phthalate (DEHP) • dibutyl phthalate (DBP) • bis(2-ethylhexyl) phthalate (DEHP) • dibutyl phthalate (DBP) • benzyl butyl phthalate (BBP) • dihexyl phthalate (DHP) • di-n-pentyl phthalate (DPP) • 1,2-benzenedicarboxylic acid, diC7-11 branched and linear alkyl esters • N-pentyl-isopentylphthalate • Dicyclohexyl phthalate • N-pentyl-isopentylphthalate	• REACH Annex XIV (entry 4, 5, 6), 33, 35, 37, 38, 39, 45) • REACH Annex XVII (restriction 30, 51)	These plasticisers can be found in packaging made of plastics and textiles.
UV protection equipment	REACH Annex XIV (entry 51, 52, 53)	UV protection devices with CAS numbers 3864-99-1, 25973-55-1 and 36437-37-3 can be contained in plastic packaging waste.
DOTE and MOTE blend	REACH Candidate List	A mixture of DOTE (CAS number) 15571-58-1) and MOTE (CAS number 27107-89-7) have been used as heat stabiliser in plastic and textile packaging waste.
Bisphenol A (BPA)	REACH Annex XVII (restriction 30, 66)	Paper and cardboard packaging printed in batches.

Packagings that cannot be classified as shaking, scraping or scraping may contain SVHCs above the concentration limit in [Table 1] of the chapter ‘SVHCs and other substances of concern’. For packaging containing residues of hazardous substances such as pesticides, chemicals containing halogens or laboratory chemicals, the information provided by the eliminating party/supplier enables the identification of the packaged hazardous substances and the presence of the SVHCs in the packaging. The table below provides a (non-exhaustive) list of SVHCs that may be present in batches of packaging waste from industrial sectors with residues of paint, glue, kit or resin.

SVHC	Regulations	Waste and description
Triglycidyl Isocyanurate (TGIC)	REACH Annex XVII (restriction 29)	In packaging containing residues of resins and coatings for inks for the printed circuit board industry, artificial resin casting systems, screen printing coatings and adhesives.
1-bromopropane	• REACH Annex XIV (entry 32) • REACH Annex XVII (restriction 30)	In packaging containing glue and ink residues.
4,4-isobutylethilidenediphenol	REACH Annex XVII (restriction 30)	In adhesive packs.
4,4'-Methylenedianiline (MDA)	• REACH Annex XIV (entry 2) • REACH Annex XVII (restriction 28)	In In glue-on packages.

Decamethylcyclopentasiloxane (D5)	REACH Annex XVII (restriction 70)	in packaging containing glue or paint residues.
Dimethyl sulphate (DMST)	REACH Annex XVII (restriction 28)	In adhesive packs.
Dibutyltin hydrogen borate	REACH Annex XVII (restriction 21, 30)	In packaging containing paint.
Furan	REACH Annex XVII (restriction 28)	In adhesive packs.
Sodium dichromate (dihydrate)	REACH Annex XIV (entry 18)	In packagings with paint residues.
P-(1,1-dimethylpropyl)phenol	REACH Candidate List	In adhesive packs.
C.I. Basic Blue 26 [with 0.1 percent or more of Michler's ketone (EC No 202-027-5) or Michler's base (EC No. 202959-2)]	REACH Candidate List	In packaging containing certain inks and dyes.
Chromium (VI) compounds	REACH Annex XVII (restriction 28, 47)	In packaging containing paint.

6. Policy and legislation developments

The sections below outline several legislative and policy developments that may be relevant to the further development of this waste plan. Information about 'packaging' is also displayed on the Packaging and packaging waste   Waste   Rijksoverheid.nlpage.

Amendment to the Packaging Management Decree

A Packaging Management Decree applies in the Netherlands. The latest version is from 2014 and the State proposed an amendment in 2021 Stb-2021-305.pdf (official publications.nl). It presents recycling rates by material type of packaging for the coming years. A new weighting method is applied in the amendment. It will look at percentages by weight for each type of packaging. In addition to the recycling targets, the change includes reuse targets. Recycling rates have also been set for ferrous metals and aluminium packaging for the first time.

Recycling rate of beverage cartons

The Packaging Management Regulation has had a particular focus on beverage cartons since its amendment of 31 May 2023. The Secretary of State identified at least 34% of the weight of beverage cartons placed on the market to be recycled in 2023 (Journal of Laws 2023, 238 Overheid.nl > Official announcements (officieleannouncements.nl)). This will increase by 3% per year in the following years, reaching 55% in 2030. With the stricter rules, such as the deposit requirement for beverages in plastic bottles, manufacturers have replaced plastic packaging with beverage cartons, as there is no deposit on them. A mandatory target for beverage carton recycling helps to avoid this shift.

Increasing and improving the recycling of packaging

Within the State, the percentages that companies have to comply with in the area of reuse and recycling of different types of packaging have been agreed:

- 74% of all packaging;
- 50% of all plastic packaging;
- 86% of all glass packaging;
- 55% of all wooden packaging;
- 85% of all paper and cardboard packaging; • 80% of all aluminium packaging;
- 94% of all steel packaging.

Collection and Extended Producer Responsibility (EPR) for packaging

Packaging is subject to an EPR, which also includes provisions on the collection or collection of packaging. Producers (including importers) are responsible for the collection or collection and treatment of packaging when it is discarded, for recycling as material and for financing the whole. The Packaging Waste Fund implements these obligations on behalf of the collective of all producers and importers.

In practice, household packaging waste is collected fairly uniformly:

- The (door-to-door) collection of paper and cardboard is left to associations and charities by many municipalities. In addition, some municipalities also use drop-off facilities for paper and cardboard to collection points, and paper trays are placed in specific locations in the municipalities.
- Container glass is collected mainly through glass containers in specific locations in municipalities.
- Plastic packaging waste is collected mainly through door-to-door systems that use sacks and/or mini-containers. In several municipalities, plastic packaging waste is post-separated from integral residual household waste instead of separate collection.
- An increasing number of municipalities are switching to door-to-door collection of beverage cartons and metal packaging, often in combination with plastics (PMD fraction, Plastic Metal and Beverage cartons).

Collection permits

The collection of certain packaging containing residues of paint, glue, kit or resin and packaging containing other hazardous substances may require a collection permit. According to the Waste Collection Decree, waste resulting from the application of paints, varnishes, stains and other similar liquid and paste substances may, for a quantity not exceeding 200 kg per waste material per delivery, only be collected by a holder of a waste collection permit. These are the holders of a KGA collection permit. For more information on the collection permit requirement and the ILT websiteon how to apply for such a permit, see the [Licensing Guidance Document].

The explanatory memorandum accompanying the Decree states that the waste is classified as EURAL codes: codes marked * under sub-processes 0801, 0803 and 0804. This waste may also include paint packaging.

Mandatory percentage of recyclate and NPCE

In the National Circular Economy Programme (NPCE), the Cabinet presented a list of measures aimed at achieving greater efficiency in the use of raw materials. This policy is further strengthened to anticipate EU legislation. In 2027, a national obligation of 25%-30% plastic recyclate will be used to produce plastics in the Netherlands for products made for the Dutch market. This obligation does not apply to products manufactured for export. In order to encourage the use of biobased plastics, this national obligation may also include the use of 25%-30% biobased plastics in production. The Climate Fund will support companies to make this transition.

EU Packaging and Packaging Waste Directive to be adopted soon

Within the European Union there is a Packaging Directive. It is from the 1990s and has been revised several times. A proposalhas been made by the European Commission to transpose this Directive into a Regulation. The text of this Regulation (EU) Packaging and Packaging Waste is not yet available[46]. The proposed Regulation has the following objectives:

- Reduce packaging waste by 15% per Member State per capita by 2040;
- Businesses will set a certain percentage of reusable or refillable packaging. This includes clear labelling and standardisation of packaging formats;
- Ban on certain disposable packaging;
- Sustainably reduce consumption of lightweight plastic carrier bags. In concrete terms, from 31 December 2025 at the latest, this amounts to an annual consumption of no more than 40 lightweight plastic carrier bags per person or equivalent targets in weight;
- Packaging fully recyclable in 2030;
- Mandatory percentages of recyclate to be used in new plastic packaging.

7. Other information

7.1Waste or non-waste

46The legislative procedure for this regulation is still ongoing within the EU and has not yet been finalised. As this Regulation is expected shortly, it has been mentioned here.

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term 'waste' should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on carrying out this assessment itself can be found in [Chapter Waste or non-waste] of the CMP and the Guide waste or non-waste.

For packaging, here is a number of specific points for attention when assessing waste or non-waste. These points do not describe the full assessment framework.

Reuse

In order to determine whether there is reuse or waste, it is important to establish the holder's intention with the packaging. If a holder discards, wants to discard or needs to discard the packaging, it is a waste. For example, where a private individual sells used packaging for the purpose of giving it a second life, this constitutes reuse and does not constitute waste. Offering second-hand packaging to a recycling store may also mean that it is reused.

However, the store should check the suitability of the packaging for reuse when it receives the packaging and then only take over the packaging that is suitable for that purpose. In addition, there must be a high degree of certainty that these packs can be sold again. The assessment of whether a material is waste or non-waste will require a case-by-case assessment of the waste status of the material, based on all the facts and circumstances of that case.

Recycling

If a container discards or intends or needs to discard it is waste. The recipient then determines the waste treatment that can be used, in accordance with laws, regulations and policies, including those contained in this CMP. Once the recycling has been completed, the conditions set out in Article 1.1(6) Environmental Management Act and [chapter waste or non-waste] make it possible to assess the existence of end-of-waste based on all the facts and circumstances of the case.

Glass cullet (end-of-waste Regulation)

For glass cullet, the European Regulation 1179/2012applies. This Regulation lays down criteria for determining when glass cullet intended for the production of glass substances or objects is to be used in the production of glass substances
re-melting processes, no longer considered waste. Glass cullet obtained by recovering glass waste is defined as glass cullet. All glass, which complies with the requirements set out in Section 2 of Annex I, falls within the scope of this Regulation. Container glass collected via the container may be included. This Regulation is the assessment tool to determine whether the container glass, which falls within its scope, is waste or non-waste. Assessments of the waste status of the glass cullet on other grounds are not permitted.

Non-waste on the market

In all cases, when packaging is placed on the market as non-waste (either directly or after recovery or not), it must comply as a minimum with the applicable product legislation. These include, for example, REACH, the POP Regulation,Regulation (EU) 2022/1616on recycled plastic materials and articles

intended to come into contact with food, Regulation (EU) 10/2011on plastic materials and articles intended to come into contact with food, and the requirements following from the Commodities Act.

7.2Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to 'potentially recoverable critical materials'.

Packaging is not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report 'Recovery potential secondary critical raw materials based on waste plans in the LAP3' (TNO, 2023).

[Section 2.3.6 'Critical materials and high dignity'] of the CMP's 'Recycling of waste' chapter provides more information on critical materials in relation to waste treatment.

7.3BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

7.4Mention of source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022a). [*Specifying conditions that prevent recycling as a minimum standard*].
- RoyalHaskoning DHV (2022b). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore becoming regular.

Packaging is either separated at source (as a PMD or PM fraction) or separated from residual waste. The minimum standard is based on both options. If the policy on the separation and collection of packaging waste changes in the future, this may affect the minimum standard described, which is based on the fact that plastic, metal and beverage cartons (PMD) are often collected and processed as combined fractions.

Developments in the processing of the materials that make up packaging are included in the respective supply chain and waste plans for plastics, metals, glass, wood and textiles.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Waste plan fine sand

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

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Waste plan fine sand

This waste plan provides the assessment framework that competent authorities should take into account when granting permits for waste treatment and cross-border transport of fines.

Synopsis

The first part of this plan contains the assessment frameworks for authorising the processing and cross-border transport of fines. Competent authorities should take these assessment frameworks into account when making decisions.

The second part of this plan explains the assessment frameworks described in the first part. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of such waste.

At the end, the future plans for the assessment frameworks of this waste plan were described. For more information on the different chain and waste plans, please refer to [materials].

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Assessment frameworks

This section of the plan describes how companies should process sieve sand and what are the focus points. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take the CMP into account when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

1. Defining assessment frameworks

The provisions of this waste plan apply to the following wastes:

Waste	Explanatory Note
Sorting strained sand	Strained sand produced by sieving fine materials in sorting plants for, but not limited to, mixed construction and demolition waste.
Sieved silk sand	Strained sand produced by the screening at a crushing plant of stony fractions from construction and demolition waste or from the stony fraction from sorting plants.
Fine crusher sand	Fine sand produced by breaking stony waste in crushing plants and is eliminated after breaking.

A detailed explanation of the scope is provided in [paragraph 4]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

2. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below address the following aspects that are relevant to permitting the processing of screened sand:

- mixing permission (2.1)
- minimum standard (2.2)

2.1Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check if mixing is a licence is required. In addition, the [chapter immobilisate, filler or aggregate] describes when an authorisation is required for the production of construction materials from waste materials.

2.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered

42	Nga	Fine sand containing more than 50 mg/kg of PAHs that is not a hazardous waste material, produced by: • screening fine material in sorting plants for construction and demolition waste; or • pre-screening stony fractions from construction and demolition waste in crushing plants.	Fine sand containing more than 50 mg/kg of dry matter (further PAH-rich) that is not a hazardous waste material and comes from the mentioned waste treatment.
112A	GA	Other hazardous waste that may not be dumped pursuant to the Landfills and Waste Dumping Prohibitions Decree [Besluit stortplaatsen en stortverboden afvalstoffen] or a minimum standard in the Circular Materials Plan [Circulair Materialenplan].	Fine sand containing more than 50 mg/kg of dry matter (further PAH-rich) which is *in fact* a hazardous waste material and comes from the same sources as those listed in waste category 42.
43	Nga	Fine sand containing not more than 50 mg/kg of PAHs that is not a hazardous waste material, produced by: • screening fine material in sorting plants for construction and demolition waste; or • pre-screening stony fractions from construction and demolition waste in crushing plants.	Fine sand containing not more than 50 mg/kg of dry matter (further low in PAHs) that is not a hazardous waste material and comes from the mentioned waste treatment.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 5.1.1 'Keeping waste separate'].

2.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks.

In the case of strained sand, this plan contains the following specific provisions, which should be taken into account by the Authority, in derogation from the general assessment frameworks:

Cat. Bal	Allowing mixing in relation to the waste categories
42 and 112A	In addition to the [mixing of waste chapter], the competent authority cannot grant a permit to reduce the concentrations of PAH10 in fine sand to 50 mg/kg of dry matter or less by mixing or diluting PAH-rich fine sand.
112A and 112B	By way of derogation from the [Waste Mixing Chapter], the competent authority can only grant a permit to mix the PAH-rich fine sand (waste category 112A) with other combustible waste (waste category 112A or 112B) if the mixing and processing results in: • destroying the PAHs and then recycling the fine sand; and
	• processing of all other waste to be mixed in accordance with their minimum standard.

[Section 5.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of fine sand.

2.2 Minimum standard

The processing of screened sand should be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of the waste in a way that is lower quality than the minimum standard if there are exceptional cases, such as calamities or the presence of certain ZZ. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the processing of screened sand:

Component flow	Waste	Minimum standard
a	PAH-rich fine sand (PAH10 concentration) > 50 mg/kg dry matter)	Cleaning, thermal or extractive, whereby the PAHs present (either immediately or after separation) are destroyed or disposed of. Then: • further process the fine sand cleaned from PAHs in accordance with b, and • further process the cleaning residue in accordance with the minimum standard of the [Residues waste plan]. Recycling of PAH-rich fine sand into soil or building material without prior destruction of the PAHs present is not permitted, including in combination with immobilisation.
b	PAH-poor fine sand (PAH10 concentration) ≤ 50 mg/kg dry matter)	Recycling, possibly preceded by cleaning. Processing of the cleaning residue in accordance with the minimum standard of the [Residues waste plan].

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 5.2 'Explanation of high-quality processing'].

Wastes containing certain SVHCs

The above minimum standard takes into account the presence of PAHs, which may also contain other SVHCs. Both the legislation described and the assessment frameworks of [Chapter mengen van afvalstoffen] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 5.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

3. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this waste plan, the above has been developed into a specific assessment framework for assessing whether the transfer of screened sand is permitted. If this specific assessment framework differs from that of the cross-border section, the assessment framework of this waste plan will be presented.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [Section 5.3 'SVHCs and other substances of concern'] of this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Scope of the assessment framework, grounds and conditions for objection

The following assessment framework applies to all substreams for screened sand as specified in [the minimum standard] of this waste plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for reuse	Due to the nature of the waste, not applicable.
(Interim recovery followed by) recycling for component stream a	Unless the PAHs present are destroyed and disposed of, and measures have been taken during processing in the country of destination to ensure that the PAHs present are not spread into the environment.
(Interim recovery followed by) recycling for component stream b	If the degree of recovery does not justify the shipment. This is the case where the recycling rate is lower than that of processing PAH-poor fine sand in the Netherlands (objection grounds 12(1)(b) and 12(1)(g) EVOA).
Other recovery	Higher quality processing in the form of recycling (for PAH-rich fine sand after destruction or disposal of PAHs) is possible (objection ground Article 12(1)(a), (b) and/or (e) EVOA (Article 12(1)(a) and, for shipments to the Netherlands, Article 12(1)(k) EVOA)).
	This prohibition also applies to transfers for backfilling or recovery in the deep substratum, as well as to the manufacture of mortars for backfilling or stabilisation purposes.

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
All forms of (preliminary) disposal except landfilling	This is because higher-quality processing in the form of recovery is possible (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
Landfill	Because of the higher quality processing possible, and/or • under national self-sufficiency, and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

The whole plan, and therefore the explanatory notes, is about waste. Therefore, the question of whether a material is waste or not is also important. [Section 6.1 'Waste or non-waste'] provides specific information on this.

4. Explanatory notes on the scope

This waste plan focuses on screened sand produced by two processes. The first process is the sorting of mixed construction and demolition waste. This sorting process can also involve the processing of similar business waste and bulky household waste. The second process is the crushing of stony waste in a crushing plant. These processes release 'strained sand' at different times.

All types of strained sand detailed below fall under the scope of this waste plan.

Sorting strained sand

Sieving waste at a sorting plant produces a sieve fraction. The mainly mineral fraction of the screen is called sorted sieved sand. This fraction may contain high concentrations of contaminants (PAH, sulphate and organic material).

Spring and fine crusher sand

The stony fraction created by sorting (concrete and masonry) is further processed into a rubble crusher. This facility also processes stony waste that has been kept separate at the source. Crusher with a pre-sieve builds (crusher) spring-sieve sand. Fine screen sand can be contaminated with PAH and sulphate and may contain organic material. Fine sand is also produced during crushing. That is fine crusher sand.

(Crusher) spring sieve sand has a grain fraction of 0 to 10 mm and is usually no longer released separately but is added to the broken material if it complies with the BRL2506(Recycling granulates for use in concrete, road construction, earthworks and civil engineering). However, this waste plan does not yet assume that this is always possible or done. Sieved silk waste sand therefore still falls within the scope of this waste plan, but of course only to the extent that it is released as a separate fraction.

The relationship between strained sand and soil

The Soil Quality Decree (Bbk) distinguishes between soil and building material. Sorting and crushing screen sand is to be considered as a building material. Strained sand is mainly released during sorting of construction and demolition waste and as such has no relation to soil material. In order to be able to use this sorting sand as a building material, quality must be tested against the standards for the application of non-shaped building materials, unless the proportion of soil in the sorting screen sand exceeds 20%.

The sifting may also be used to screen soil particles. This is the case, for example, when screening a soil layer with high levels of debris or when sieving adhering soil from green waste. In such cases, the sieved sand is related to soil material and should be considered as soil. This sieved fraction is not covered by the 'fine sand' waste plan, but by the 'soil' plan.

Sand produced by a sand separation plant or extractive cleaning of fine sand is also considered soil. This sand has been used to make concrete and bricks, thus encased in a product and released after processing. This sand can normally simply fulfil a soil function. In this case, the quality should be assessed against the standards of the Soil Quality Decree. In this case, the 'ground' waste plan applies. The sieve-sand cleaning residue cannot be considered as soil if it is not a mineral fraction or if it contains too much foreign material.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Mixed construction and demolition waste	[Waste plan mixed construction and demolition waste]
Mixed sorting fractions from the processing of	[Waste plan mixed construction and demolition

construction and demolition waste, commercial waste with a comparable composition, residual household waste with a comparable composition, and domestic waste resulting from the conversion of unsorted waste from private individuals	waste]
Stony material	[Stony waste plan]
Residue released when cleaning screened sand	[Waste plan residues]
Material that complies with the provisions of the definition of 'soil' in Article 1 of the Soil Quality Decree, such as soil from the sieving of a soil layer with rubble or, for example, sand from a sand separation plant or a sand cleaning plant	[Waste plan land]

EURAL codes related to this plan (indicative)

The following EURAL codes may apply to waste included in the scope of this waste plan: 191209; 191211*.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only paragraph 1 of this waste plan defines what is covered by this plan and not this list of EURAL codes.

5. How to prepare high-quality notes

5.1 Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 2.1.2 'Mixing permission'] sets out the assessment framework for allowing the mixing of fine sand. In the case of 'mixing', this is described in [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

5.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep their fine sand separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	In the construction and demolition sites of construction works, there is no legal requirement to keep the fine sand separated and removed separately which is released when carrying out actual construction and demolition work on construction works *(Art.). 7.24, 7.25 and 7.26 Environmental Structures Decree)*.
Keeping industrial waste and hazardous waste separate *(general)*	Companies are required to keep PAH-poor fine sand, PAH-rich fine sand and fine sand that is hazardous waste separate and to dispose of it separately from other waste, unless they have a mixing permit *(Article). 3.195 and art. 3.196 Ball and 'mixing of waste' chapter)*, except for strained sand based on par. 3.2.25 The Bal 'Application of building materials' may be used. Mixing of non-applicable fines requires a permit. [Waste mixing chapter] of the CMP and [Section 2.1 'Mixing permission'] of this waste plan provide the assessment framework for mixing permission.

Keeping separate during collection	Collectors must always keep strained sand delivered separately for each waste category *(Art.). 1b. Waste Collection Decree)*.

5.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.6 'Mixing and building materials']
- [Section 4.2.2 'Mixing of hazardous waste']
- [Section 4.2.4 'Mixing of POP-containing waste'] and/or [Section 4.2.3 'Mixing of waste containing PBT or vPvB substances or substances of 'equivalent care']

Always check whether any of the chapter's assessment frameworks apply to the mixing of fine sand.

The essence of allowing the mixing of fine sand is that processing in accordance with the minimum standard should remain possible after mixing. In the case of strained sand, this means that:

- The competent authority cannot grant a permit to mix PAH-rich fine sand (waste category 42 or 112A) with other (waste) substances in fines with a PAH concentration ≤ 50 mg/kg. This assessment framework is complementary to that of the [Waste Mixing Chapter].
- The competent authority can only authorise the mixing of PAH-rich fine sand (waste category 42 or 112A) with other waste or non-waste if processing results in:
  - destroying the PAHs and then recycling the fine sand; and
  - all other waste to be mixed is processed in accordance with their minimum standard. The mixing of waste for incineration (within waste category 112) is a derogation from the [mixing of waste chapter].
- The competent authority may, however, grant a permit to mix PAH-poor fine sand within waste category 43 for recycling. This also applies to mixing with other (waste) materials, provided that the minimum standard is met.
- If the strained sand is extractive, it is soil. An explanation of the mixing of soil is provided in [section 5.1.2 'Explanation of mixing of waste materials' of the 'Waste plan land'.

5.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard set out in paragraph 2.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Given the nature of the waste, reuse (as defined in the definition of 'reuse') is not an option.
Preparing forre-use	Given the nature of the waste, preparation for reuse (as defined in the definition of 'preparation for reuse') is not an option.
Recycling	PAH-poor fine sand should be recycled (on a residue from extractive cleaning). There are several ways to do this. Cleaning may be required in advance. PAH-rich fine sand should also be recycled after first being extractive or thermally cleaned of PAH.
Other usefulapplication	Other useful application of strained sand is of a lower grade than the minimum standard and is not permitted. This does not allow, for example, use as a filler.
Incineration as a formof disposal	Other useful application of strained sand is of a lower grade than the minimum standard and is not permitted. In addition, fine sand is non-combustible.
Landfill	Fines are subject to a dumping ban.

5.2.1 Preparing for reuse

Given the nature of the waste, ‘preparing for reuse’ fine sand (in the sense of the definition) is not an option because fine sand is not used again for its original purpose. Fine sand is a residual product from waste treatment. The different ways in which strained sand can and may be utilised are recycling.

5.2.2 Recycling

The policy on fine sand is aimed at recycling the mineral fraction. In the case of fine sand with high levels of PAHs, the PAHs must first be separated. The minimum standard for fine sand is in line with the objective of the recovery of waste in the most high-quality manner possible and with the least possible loss of quality. Recycling fine sand reduces the use of primary raw materials. The minimum standard for fine sand is based on operational techniques.

PAH-poor fine sand

The recycling of low-PAH fine sand produces a non-formed building material. Sieving or otherwise separating the fine sand can result in a sand fraction that should be considered soil under the Soil Quality Decree (see the information box on [the relationship between strained sand and soil] earlier in this plan).

Sorting strained sand will in many cases have to be cleaned before it can be recycled. Fine crusher sand, on the other hand, is less frequently contaminated. The report ‘Investigation of the extent of recovery’ (RHDHV, 2022) shows that several processors have sufficient capacity to process PAH-poor waste. The low-PAH content is made suitable for marketing in concrete, unbound sub-bases and, if not otherwise possible, immobilisation. Immobilisation is the most expensive route for marketing and is therefore not the preferred option of economic operators.

PAH-rich fine sand

PAH-rich fine sand contains PAH10 in a concentration of more than 50 mg/kg of dry matter. The minimum standard for this fine sand requires the removal or destruction of the PAHs present.The limit of 50 mg/kg of PAHs is derived from the maximum composition value for construction materials from the Soil Quality Regulation 2022 (RBK 2022). In order to avoid PAH contamination blending, the mixing assessment framework of [Section 2.1.2] of this plan explicitly states that the 50 mg/kg dry matter limit may not be reached by mixing or diluting PAH-rich fine sand.

The report by Royal HaskoningDHV referred to above shows that, in addition to PAHs, PAH-rich (sorting) fine sand often also contains asbestos, SVHCs, gypsum (sulphate) and various non-mineral particles such as insulation materials, wood and plastics. These contaminants limit the outlets for thermally cleaned fine sand. Some of the contaminants can be prevented by the following two measures:

- Handling a maximum sieve size of 10-15 mm for sorting screen sand in sorting plants for construction and demolition waste.
- Separation of sorting strained sand from sorting plants for construction and demolition waste when the sorting line post bulky municipal waste.

Recovery as building material in landfills

The minimum standard allows the recycling of low-PAH fine sand at landfill sites. The use of PAH-poor fine sand as a building material in a landfill is only to be considered as recycling if:
- the waste is used for the construction of necessary facilities at the landfill and
- replace other materials or components that should have been used for that function, and
- the provisions in question cannot be implemented by landfill material offered for disposal, for example because they are not offered.

In all other cases, landfilling is involved. This is contrary to the minimum standard for fine sand in the PAH-poor.

In addition, permitting its use as a building material in landfills:
- be material that meets the quality requirements set out in the Soil Quality Decree (see paragraph 1).
  4.123 and/or 4.124 of the Bal); and
- [Section 3.3.2 ‘Recovery at landfills’] of the ‘Landfilling or recovery’ chapter and [Section 1.8.4.1 ‘use in a landfill’] of the ‘Guidance on processing operation classification’ are complied with.

5.2.3 Other recovery

Processing of fine sand by ‘other recovery’ does not comply with the minimum standard. Thus, the use of screened sand to backfill mines and quarries on the surface or to stabilise subsurface caverns (or the export thereof) is not permitted.

5.2.4 Incineration as a form of disposal

The incineration of fines does not comply with the minimum standard. Moreover, the incineration of fines is not an option, as strained sand is not a combustible waste.

5.2.5 Landfilling

Fine sand is subject to a dumping ban pursuant to Article 1(1), category 30, of the Landfills and Dumping-prohibited Waste Decree.

The use of screened sand as a building material in a landfill is not considered a landfill. This has already been described in [Section 5.2.2] of this plan.

Strained sand that has been extractive cleaning should be considered soil. The ground is subject to a dumping ban pursuant to Article 1, first paragraph, category 31 of the BSSA. The dumping of a batch of soil is allowed only if the company offers the soil at the landfill with a declaration as referred to in the ministerial regulation pursuant to article 1a of the BSSA, attesting that the soil is non-decontaminable and not cold-immobilisable.

5.3Substances of very high concern (SVHCs) and other substances of concern

SVHCs in the table below are known[47] to be present in fine sand in concentrations above the concentration limit in [Table 1] in the chapter ‘SVHCs and other substances of concern’. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 ‘Legislation to phase out and restrict use’] of the chapter ‘SVHCs and other substances of concern’.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Authorisation Guidance]. When applying for a permit, waste companies and the competent authority make a case-by-case assessment of the SVHCs and other substances of concern (SVHCs)

relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the ‘Addressing Substances of Very High Concern’ (IPLO) page and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

47Source: SGS Intron, 2019, SVHC in waste.

The table below provides a (non-exhaustive) list of SVHCs that may be present in screened sand above the concentration limit in [Table 1] in the chapter ‘SVHCs and other substances of concern’. This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

SVHC	Regulations	Waste and description
Polycyclic aromatic hydrocarbons (PAHs)	REACH Annex XVII (restriction 50)	In sorting strained sand produced by residues of tar-containing roofing waste, soot and/or creosote wood.

6. Other information

6.1 Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term ‘waste’ should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

Always waste

The materials covered in this waste plan are always waste. However, once processed, the waste status of the material may be re-examined. For example, if the demand for waste or non-waste is asked after sorting out any mono-streams, it must be assessed on the corresponding chain or waste plan of that material.

6.2 Recovery of critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to ‘potentially recoverable critical materials’.

Fine sand is not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report ‘Recovery potential secondary critical raw materials based on waste plans in the LAP3’ (TNO, 2023).

[Section 2.3.6 ‘Critical materials and high dignity’] of the CMP’s ‘Recycling of waste’ chapter provides more information on critical materials in relation to waste treatment.

6.3 BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

6.4 Mention of source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022b). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

Developments on the topic [immobilisation] of the CMP may have an impact on the review frameworks of this waste plan in the future.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Document from LAP to CMP

This is a document annexed to the National Waste Management Plan (LAP3). The document will become part of the successor, the Circular Materials Plan (CMP). It does not contain any assessment frameworks. Where necessary, it will be adapted to the content of the CMP if finalised following the public participation procedure. It is an existing document and is not part of the draft CMP and the public participation procedure.

Date: January 2025

Netherlands waste prevention programme

- Waste prevention measures -

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Introduction

The growing global population is leading to an increasing demand for raw materials and more waste. Waste can contaminate the air, groundwater and soil, adding CO2 and methane to the atmosphere, which in turn contributes to climate change. Reduced waste generation and consumption of raw materials is better for people and the environment. The importance of waste prevention is increasingly recognised. The focus on prevention also changes the perspective on waste. In a circular economy, waste is increasingly seen as a valuable source of raw materials.

In the Netherlands, waste prevention measures are taken within the broader framework of the nation-wide Circular Economy programme 'The Netherlands Circular by 2050'. The The Netherlands Waste Prevention Programme does not contain a new policy but, in line with European requirements, describes existing measures and initiatives that the Netherlands is taking in the area of waste prevention. These requirements were strengthened by the amendment of the Waste Framework Directive in 2018.

The waste prevention programme shows what the Netherlands is doing in the area of waste prevention. This shows that the Netherlands complies with the extended European requirements. Nevertheless, the Netherlands will continue its efforts to develop new ways of stimulating waste prevention.

Synopsis:

Section 1 provides a more detailed framework and content requirements for the waste prevention programme. Chapter 2 explains what waste prevention is and how it contributes to circular economy objectives. Chapters 3 and 4 describe the waste prevention measures.

1. European framework

1.1 Waste Framework Directive

The Waste Framework Directive (WFD)[48] sets objectives and a general framework for EU Member States to protect the environment and human health by preventing and reducing waste generation and the negative impacts of waste generation and management. The WFD also ensures a reduction in the overall impacts of resource use and resource efficiency.[49]

The WFD was amended in 2018.[50] This amendment is part of the policy package presented by the European Commission in December 2015 to promote the circular economy.[51] The aim of this policy package is to improve the efficiency of the handling of raw materials. Against this background, the WFD in Article 29 requires Member States to set up waste prevention programmes that describe at least the waste prevention measures listed in Article 9(1).[52] The objectives and measures should aim to decouple economic growth from the environmental impacts associated with the generation of waste.

Rules from the WFD on waste prevention programmes have a legal basis in Chapter 10 of the Environmental Management Act (Wm) in the Netherlands.[53] No additional requirements are set out in the EMA. The Netherlands has chosen to establish the waste prevention programme as a separate programme and not to include it in the National Waste Management Plan (LAP3).[54] At the end of 2013, the first waste prevention programme was established, called 'Netherlands Waste Prevention Programme – Better design, less waste, more conscious consumption'.[55]

With the amendment of the WFD, the requirements for waste prevention and
waste prevention programmes in place. The current waste prevention programme (APP) therefore serves both to update the previous programme and to implement the amended requirements of the WFD. The new requirements relate to the description of, inter alia, measures related to sustainable production and consumption models, the reusability and reparability of products, and the reduction of waste generation, including food waste and littering.

The aim of the APP is to provide an overview of the measures taken by the Netherlands to prevent waste. Given its informational nature, the APP does not influence decision-making by public authorities, nor is it otherwise binding. Nor does it require citizens or businesses to do so. Furthermore, as it only reflects existing waste prevention measures, it does not contain any new policy or announcements of future measures. Furthermore, as with the 2013 APP, the overview is not exhaustive. Firstly, because only waste prevention measures by the Dutch Government and not by local authorities were taken into account in the inventory, and secondly, because only measures falling within the scope of Article 29 of the WFD were considered.

1.2 Content requirements for waste prevention programme

48 Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ 2008 L 312).

49 This is the objective set out in Article 1 of the WFD.

50 Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste (OJ 2018 L 150).

51 The European Commission's package consists of six sections including the Circular Economy Action Plan (COM(2015) 614) and several proposals for amendments to waste-related directives, including the WFD.

52 Article 29(1) of the WFD states: *Member States shall establish waste prevention programmes that describe at least the waste prevention measures set out in Article 9(1) in accordance with Articles 1 and 4.*
Article 1 of the WFD sets out the objectives of the Directive and Article 4 of the WFD describes the waste hierarchy. Information on the waste hierarchy is provided in Section 2.2.

53 Pursuant to Article 10.7 of the EMA, waste prevention programmes are to be established as referred to in Article 29 of the WFD.

54 National Waste Management Plan 2017-2029 – Smarter approach to raw materials, Ministry of Infrastructure and Water Management, State Journal No 68028, 2017. Chapter B.2 of LAP3 addresses waste prevention in general terms.

55 Netherlands Waste Prevention Programme – Better design, less waste, more conscious consumption, Ministry of Infrastructure and the Environment, State Journal No 27383, 2013.

Article 29 of the WFD defines the elements that the APP must contain, referring to Article 9(1), which specifically deals with waste prevention and the minimum waste prevention measures to be taken by Member States. In addition, Article 29 refers to two annexes:
Annex IV and Annex IVa.[56]

Annex IV provides examples of waste prevention measures and Annex IVa provides examples of economic instruments and other measures to incentivise the application of the waste hierarchy. Article 29 of the WFD states that where relevant, the contribution to waste prevention of the instruments and measures listed in Annex IVa must be described. In relation to Annex IV, the usefulness of the examples of waste prevention measures mentioned or other appropriate measures should be evaluated.

The current APP contains all these elements. Before moving on to Chapters 3 and 4, Chapter 2 first explains the meaning of waste prevention and its place in the circular economy.

2. Waste prevention

2.1 Need for waste prevention

56 See Annex I of the APP for a representation of Articles 29 and 9, and Annexes IV and IVa of the WFD.

An increase in the world's population, increasing wealth and changing patterns of production and consumption lead to the growing use of raw materials, a change in the use of materials and increasing quantities of waste and their composition. In addition, environmental problems, such as climate change, ocean plastic soup and biodiversity loss are being traced back, inter alia, to the wasteful handling of raw materials and growing waste issues. Global consumption of raw materials is expected to double over the next 40 years, while annual waste generation is expected to increase by 70% by 2050.[57][58]

These developments are important, as negative impacts on people and the environment may arise from the extraction, processing and use of raw materials and the collection and processing of waste that is released following these steps. In addition, the economy relies on critical raw materials.[59] Environmental pressures from the use of raw materials and waste generation are high and will therefore require continued attention.

2.2 Objective and definition of waste prevention

Waste prevention focuses on preventing or limiting the generation of waste. Waste prevention refers to all activities that take place before a product, material or substance becomes waste. Article 1.1(1) of the EMA includes the definition of 'prevention'. Waste prevention has both a qualitative and a quantitative component. Waste prevention is defined as:

> *Measures taken before a substance, material or product has become waste in order to reduce:*
>
> a. *the quantity of waste, including through the reuse of products or the extension of the life span of products;*
>
> b. *the negative impact of the waste generated on the environment and on human health; or*
>
> c. *the content of hazardous substances in materials and products.*

Waste prevention is rooted in the waste policy and is the highest priority in the waste hierarchy. Article 10.4(1) of the Wm includes the waste hierarchy in accordance with Article 4(1) of the WFD. It is a priority order for waste prevention and management measures to be taken. In the waste hierarchy, prevention is the first priority, followed by preparation for reuse, then recycling, other forms of recovery (including energy recovery and backfilling) and final disposal (including landfilling and incineration without energy recovery). Although effective and efficient waste management helps to reduce the amount of waste, waste prevention reaches beyond waste management. Waste management is considered when something has become waste. Waste prevention, on the other hand, covers material aspects of the economy as a whole and covers the design, production and consumption phases.

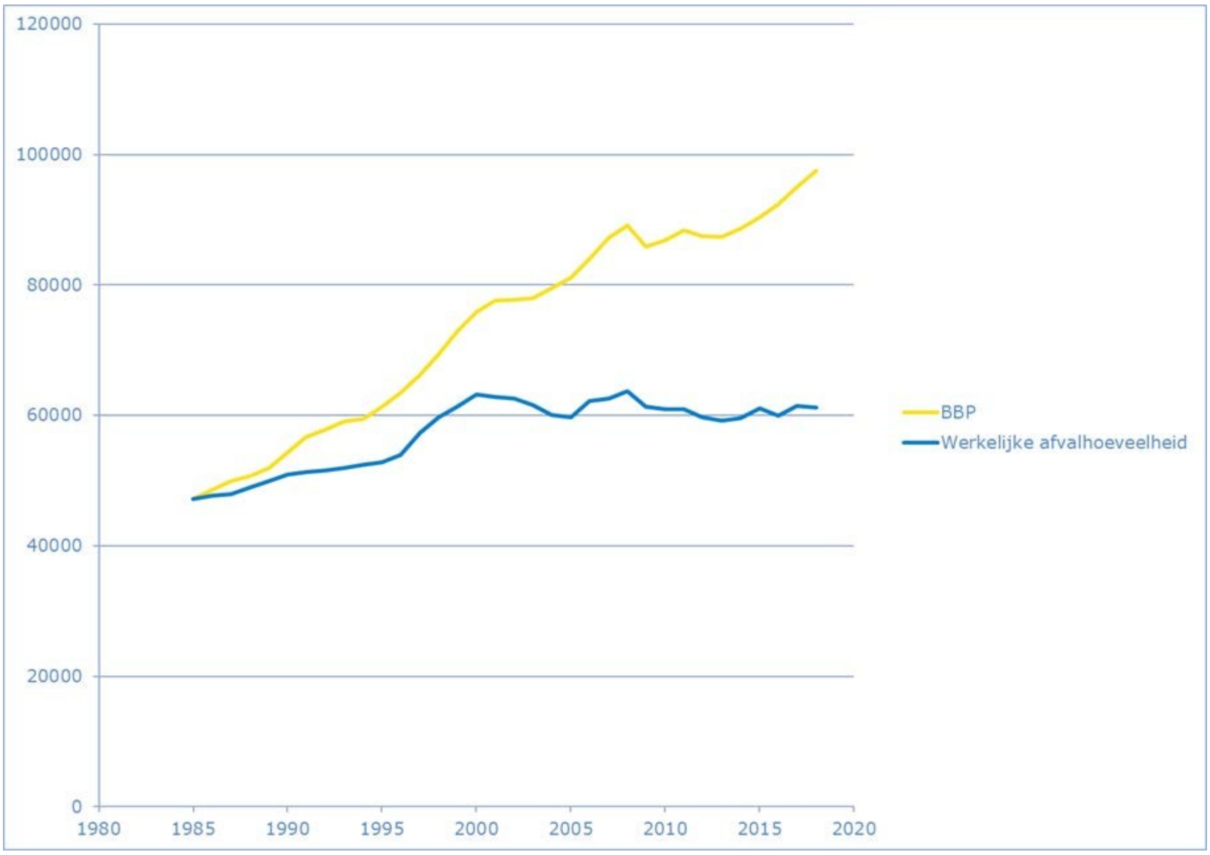
According to the amended WFD, waste prevention measures should aim to decouple economic growth from the environmental impacts of waste generation. Quantitative prevention in the Netherlands is determined by comparing the growth of the Gross Domestic Product (GDP) with the growth in waste production. In addition, the aim of the Dutch waste policy, set out in the LAP3, is to ensure that total waste generation does not grow beyond 61 Mton in 2023 and 63 Mton in 2029.

The comparison between waste generation and GDP growth in Mton from 1980 to 2018 is shown below.

57 Organisation for Economic Cooperation and Development (OECD), *Global Material Resources Outlook to*

58– *Economic drivers and environmental consequences*, OECD Publishing, 2019;
World Bank, *What a Waste 2.0 – A Global Snapshot of Solid Waste Management to 2050*, Urban Development Series, 2018.

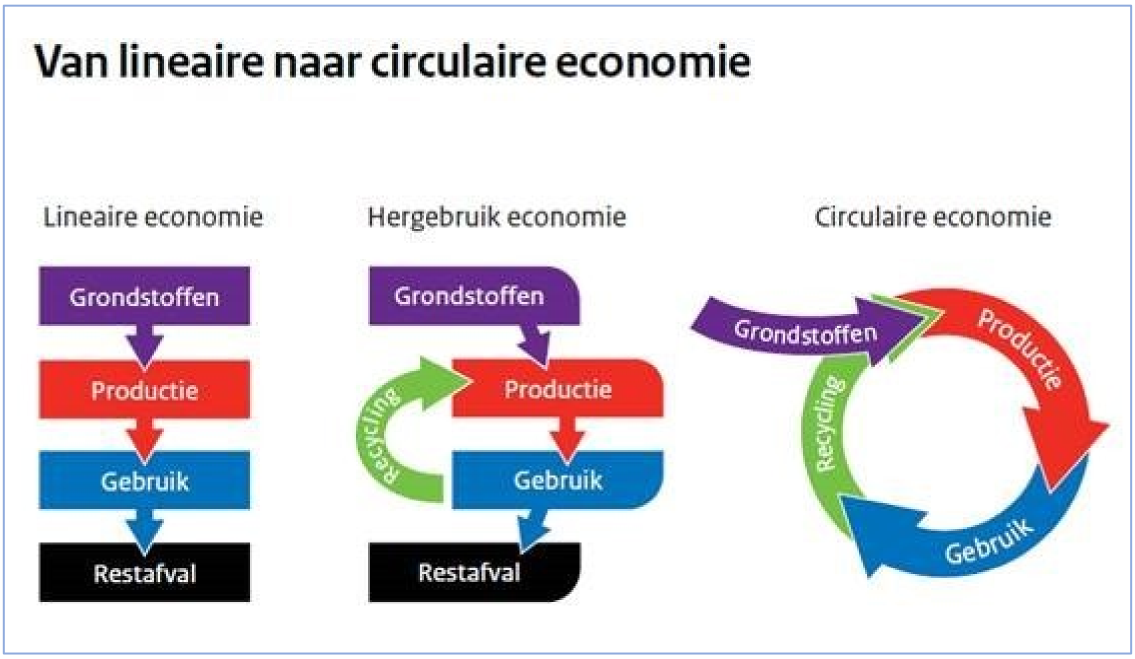
59 Critical raw materials are commodities that are of major economic importance to the EU and for which there is a risk of inadequate supply. The resulting economic impact is higher than for most other raw materials. The European Commission has prepared a list of critical raw materials. It was updated in September 2020 (COM(2020) 474) and contains 30 critical raw materials.



Source: RWS, 2020

2.3 Waste prevention in the circular economy

The issues of raw materials and waste call for a shift from a linear, a reuse-driven economy to a circular economy that maximises the efficiency of natural resources while minimising environmental pressures (see figure below). Waste prevention makes an important contribution to these circular economy objectives by reducing waste generation and resource utilisation. In addition, measures aimed at reducing the content of harmful substances in materials and products increase the use of secondary raw materials, as the materials remain available for further use. Preventing waste and using waste as a raw material is essential for more efficient use of raw materials and for closing the material cycle in a circular economy.



Source: RPCE, 2016

Prevention of waste generation has been the top priority in Dutch waste policy since the late 1970s (over recycling, incineration and landfill). In the following decades, policies focus on waste prevention within companies and industries. The prevention of household waste also gained increasing attention. The policy was shaped by prevention programmes, projects, granting permits, general rules, voluntary agreements and financial instruments.

In recent years, the Netherlands' commitment has been focused on developing and implementing a circular economy by 2050. In this context, waste prevention is increasingly embedded in a number of measures that favour the development of a circular economy. In 2016, the nation-wide programme for a circular economy in the Netherlands (RPCE) drew up 'The Netherlands Circular by 2050'.[60] Within the RPCE, attention is paid to measures that lead to waste prevention. These measures are largely in line with the requirements and objective of the WFD. Examples include sustainable production and consumption models and the reusability and reparability of products.

To support the transition to a circular economy, thinking models, including 'R strategies', have been designed by different actors to reduce resource use. One is the circularity ladder, also known as the 'R ladder', where the R strategies are arranged from most to at least raw material savings, thus avoiding or reducing environmental pressures.[61]

The top strategies of the circularity ladder focus on waste prevention, which is the first priority of the waste hierarchy. The primary focus is on *perfumery*, the abandonment of products. This is the strictest interpretation of waste prevention: the production or use of a product is waived. *Rethink* refers to the increased use of products by dividing them or making them multi-purpose. This is followed by *reduce*, making products more efficient or making products more efficient in use. The subsequent steps of the circularity ladder extend the lifespan of products, thereby also contributing to waste prevention: *reuse*, *repair* and *remanufacture* (repair and reuse of product components). The circularity ladder then includes two further R strategies: recycling and re-storage. Although these strategies deal with waste treatment operations and therefore are not strictly covered in

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60 Nation-wide Circular Economy – Netherlands Circular by 2050, Ministry of Infrastructure and the Environment and Ministry of Economic Affairs, 2016.

61 As explained, inter alia, in: Environmental Assessment Centre (PBL), *Circular Economy Mapping*, PBLpublication number 3401, Publishing PBL,2019; and PBL, *Circular Economy: Measuring Innovation in the Chain*, PBLpublication No 2249, Publishing PBL, 2016.
The existing circularity groups are all building on the so-called 'Lansink Ladder', which contains a priority order for waste prevention and management. This ladder has been named following a motion by CDA Member of Parliament Ad Lansink, adopted by the House of Representatives in 1979. The ladder has since played an important role in Dutch waste policy, even though it has now been designed as the waste hierarchy and as such is enshrined in legislation at European level.

waste prevention but rather in waste management, they do contribute to resource efficiency by reducing the use of (critical) primary raw materials. This also reduces the amount of waste released during the extraction or harvesting of these primary raw materials.[62]

Source: PBL, 2019

3. Waste prevention measures

This chapter describes the measures referred to in Article 9(1) of the WFD.[63] The waste prevention measures described stem from the broader policy on the transition towards a circular economy. The RPCE serves as a basis for this. The RPCE sets out a vision and describes the cabinet's ambitions

62*Please note:* some of the terms in the circularity ladder are not in line with the legal definitions set out in Article 1(1) of the EMA and as used in the waste hierarchy.

63 An overview of the sources consulted for this chapter is provided in Annex II. [16] Raw Materials Agreement – Intention agreement to develop transition agendas for the Circular Economy, Ministry of Infrastructure and the Environment, 2017.

and goals regarding the circular economy. In the subsequent Raw Materials Agreement[16], more than 400 partners have endorsed these ambitions. These include businesses, NGOs, financial institutions, knowledge institutes, public authorities and other organisations. The transition agendas[64] of five priority raw material chains were prepared on behalf of these partners in 2018. This was responded to by Cabinet Response to the Circular Economy Transition Agendas[18] and the Circular Economy Implementation Programme 2019-2035.[65] In September 2020, the first update of the Implementation Programme was published.[20]

Other sources were consulted where relevant. With regard to food waste, these are the policy documents of the Ministry of Agriculture, Nature and Food Quality (LNV).[66] Furthermore, the Top Sectoral Policy also provides a basis for actions related to waste prevention.[67]

3.1 Sustainable production and consumption

Demand for raw materials, such as food, electrical appliances and clothing production, is rising sharply worldwide. Therefore, the authorities work with industry, knowledge institutes, nature and environmental organisations, authorities, trade unions, financial institutions and other civil society organisations to make raw materials more efficient and smarter. The aim is to: Completely circular in the Netherlands by 2050. The cabinet’s ambition is to achieve an intermediate target of a 50% reduction in the use of primary raw materials (minerals, fossils and metals) by 2030. This ambition is also one of the missions of the Senior Sector Policy.

Through the RPCE, the Netherlands focuses on three strategic objectives:

1. Raw materials in existing chains are used to a high standard. This efficiency gain may lead to a decrease in raw material requirements in existing chains.
2. Where new raw materials are needed, fossil, critical and non-sustainably produced raw materials are replaced by sustainably produced, renewable and generally available raw materials. This will not only make the economy more future-proof, but also less dependent on fossil sources and their imports. Natural capital is also maintained in this way.
3. Develop new production methods, design new products and rearrange areas. Public authorities are also promoting new ways of consuming. This leads to other chains that give an additional boost to the desired reduction, replacement and use.

The RPCE also highlights the importance of increasing focus on different consumer behaviour, with a particular focus on waste prevention. This behaviour is part of a whole-chain approach to a given product, from design and production through to disposal and recycling.

The central government is often the RPCE’s main activities, which include networking and facilitation. The aim is, among other things, to create incentives for producers and consumers, to remove barriers, to stimulate new forms of funding and to build up knowledge and experience. Various cross-cutting themes are used to achieve this: extensive producer responsibility, laws and regulations, circular design, circular procurement, market incentives, funding, knowledge and innovation, behaviour and communication, education and labour market and monitoring. The main waste prevention measures are outlined below.

<u>Measures description</u>

Extended producer responsibility

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64 Five transition agendas were published in 2018: Biomass and Food Transition Agenda, Transition Agenda Plastics, Transition Agenda Manufacturing Industry, Transition Agenda Construction and Consumer Goods Transition Agenda. [18] Cabinet response to the circular economy transition agendas, Ministry of Infrastructure and Water Management, IENW/BSK-2018/117330, 2018.

65 Circular Economy Implementation Programme 2019-2023, Ministry of Infrastructure and Water Management, 2019. [20] Update of the Circular Economy Implementation Programme 2020-2023, Ministry of Infrastructure and Water Management, IENW/BSK-2020/184619, 2020.

66 An overview of these sources can be found in Annex II.

67 In April 2019, the cabinet sent a letter to the House of Representatives concerning the mission-driven mission
Top Sector and Innovation Policy. In the letter, missions were appointed for four societal topics. The themes also focus on the circular economy, namely as part of ‘Energy transition and sustainability’ and specifically on food as part of ‘Agriculture, Water and Food’. Parliamentary Paper 33 009, No 70.

At the initiative of the government, extended producer responsibility (EPR) has been introduced in the Netherlands for electrical and electronic equipment, batteries and accumulators, end-of-life vehicles, tyres and packaging. In addition, both the market and the government are looking at options to set up EPR schemes for other product chains.[68] With the implementation of the European Directive on the reduction of the impact of certain plastic products on the environment (Directive (EU) 2019/904)[69], extended producer responsibility for balloons, tobacco products, fishing gear and wet wipes is added.[25] The EPR policy encourages links between parties in the chain. The reuse of materials and waste prevention are encouraged by the responsibility of producers for their products at the waste stage.

Laws and regulations
Entrepreneurs in the circular economy often invest with innovative ideas in a new field. Circular Netherlands Acceleration House: bringing the parties together to explore whether barriers, including in legislation and regulations, can be eliminated. For example, in the case of alternative business models that encourage life extension by keeping ownership with the manufacturer. In addition, Article 5.7 of the Living Environment Law Decree allows companies to incorporate requirements for the efficient use of raw materials and the prevention of waste into their living environment permits.

Circular design
The RPCE promotes, among other things, circular design activities using the CIRCO programme. CIRCO provides guidance for business owners to design their products and/or services and business models in a circular way. A mid-term review shows that participants in CIRCO workshops are particularly committed to reducing (*virgin*) use of raw materials, reuse and (design for) product retention.[70] Municipalities, industry associations and knowledge associations, among others, can offer the CIRCO methodology to companies in their network.

Circular procurement
Based on the commitments in the Green Deal, the Government is committed to circular procurement with public and private parties to initiate and scale up circular procurement pathways by the State and to make the knowledge gained through this process accessible to other purchasers. The government itself is also purchasing circular, using the least raw materials possible and preventing waste. By 2023, 10 generic procurement categories should be circular, such as office furniture, corporate clothing, paper and printed matter, ICT hardware, catering, waste and raw material management. The Central Government Real Estate Agency, the Directorate-General of Public Works and ProRail are circular in their procurement efforts for construction and infrastructure.

Market incentives and financing
The cabinet is using mechanisms to stimulate the market to invest in products and services with less CO2 emissions and more reuse. For example, the rates of the waste tax on landfilling and incineration have been increased. In addition, existing tax schemes such as the Milieu-investeringsaftrek (Environmental Investment Allowance, MIA) and the Willekeurige afschrijving milieu-investeringen (Random Depreciation of Environmental Investments, VAMIL) have been made more accessible for circular projects. The MIA and Vamil schemes are used to stimulate investment in innovative, more environmentally friendly assets.

Knowledge and innovation
In addition to boosting research and innovation through the Knowledge and Innovation Agenda (KIA-CE) and the Policy of the Top Sectors, the Netherlands has several grant schemes that support research and development of cleaner and less wasteful technologies and products. This has also made budgets available for, for example, the redesign of products or production processes that

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68 In addition to the government's potential to adopt product decisions and schemes, producers can request the government to declare a contract for a waste management fee to be generally binding.

69 Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment (OJ 2019, L 155/1). [25] EPR schemes must start to apply by 31 December 2024 at the latest, with the exception of those for tobacco products with filters and filters for use with tobacco products. These arrangements should enter into force at the latest on 5 January 2023.

70 Technopolis Group, Barnebies and TNO, *The impact of CIRCO – Study on the impact of CIRCO and its expected contribution to (future) CO2 reduction,* 2019.

reduces the need for raw materials or the wastage of production processes. These include, for example, the Wet Bevordering Speur- en’s tax innovation scheme
Development Services (WBSO), Small Business Innovation Research (SBIR), and Demonstration Energy and Climate Innovation (DEI+) Circular Economy.

Behaviour and Communication, Education and Labour Market
Waste prevention-related campaigns aim to make consumers aware of the environmental impact of waste while offering a commercial perspective with more sustainable alternatives. For example, the Environment Centre and the Nutrition Centre are raising awareness and the ‘Everyone is doing what’ campaign. Food waste and reuse are important topics in this area.
True behavioural influence is an important part of the measures.
Scientific behavioural knowledge is translated into practical actions for municipalities and businesses in the programmes for litter, household and business waste. In addition, knowledge on the circular economy is integrated in training with knowledge institutions, secondary VET, secondary VET and higher VET.

Monitoring
The Environmental Assessment Agency (PBL), together with seven other knowledge institutions, is monitoring the transition to a fully circular economy in 2050 and progress towards the intermediate target of halving the use of primary abiotic raw materials in 2030. The work programme is structured into five work packages: reporting, transition monitoring, raw materials and impact monitoring, scenario analysis, and policy modelling and evaluation. It also looks at waste prevention and re-use activities and other waste prevention topics, such as the use of substances of very high concern and critical materials.

3.2 Critical raw materials

One of the three strategic objectives in the RPCE relates to critical raw materials. Where new raw materials are needed, fossil, critical and non-sustainably produced raw materials are replaced by sustainably produced, renewable and generally available raw materials. Critical raw materials are commodities that are scarce due to limited presence of raw materials in the earth or for which supply is uncertain due to dependence on other countries.[71] The aim is to prevent the use of critical materials while at the same time preserving the materials present in the economy and thus preventing them from being lost as a waste stream. Measures focus in particular on identifying critical raw materials. Research and knowledge sharing, such as tools and pilots, are of great importance.

<u>Measures description</u>

Vulnerability assessment
TNO carried out research into which materials are important for the Dutch economy. Critical raw materials are included. One of the objectives of the study was to provide guidance to stakeholders (industry and policy arena) on possible means of action to reduce economic vulnerabilities.

Raw material scanner tool
The Raw Material Scanner developed on the basis of the TNO study. This tool helps businesses and chains understand the risks they face in terms of raw material supply. The Raw Material Scanner contains data on 64 abiotic raw materials. These are commodities with a relatively higher risk of scarcity.

Security of supply & recovery pilots
Within the transition agenda in manufacturing, security of supply of critical raw materials is one of seven priorities. It focuses on the materials needed for the energy transition. Recovery of critical raw materials and increase of material efficiency are also being carried out. For example, in one of the projects, several private parties are working on the recovery of indium from displays. Tests are also carried out to recover zinc from safety barriers (safety barriers). Recovery and recycling contribute to security of supply and reduce the depletion of these scarce metals. The transition

71 China is the most influential country with regard to the global supply of critical raw materials, including rare earth elements, magnesium, tungsten, antimony, gallium and germanium. Several other countries dominate the supply of specific raw materials, such as Brazil (niobium) and the US (beryllium and helium). Platinum metals come mainly from Russia (palladium) and South Africa (iridium, platinum, rhodium and ruthenium).

agenda for biomass and food also looks at the recovery of critical nutrients such as nitrogen, potassium and phosphate.

Monitoring
A Raw Materials Information System (GRIS) is being developed for the monitoring of the Circular Economy Policy. In addition to information on raw material flows, trends in use and stocks in the economy, the GRIS initiative also investigates critical materials.

3.3 Dangerous substances

The Dutch waste policy focuses on all substances that pose or could pose an environmental and hygiene risk in waste management, including recycling. A particular group of dangerous substances are those ‘substances of very high concern’ (SVHCs) that can have serious and often irreversible effects on human health and the ecosystem at very low levels of exposure over time.[72] Substances are considered SVHCs if they meet the criteria set out in Article 57 of REACH.[73] The aim of public policies is to eliminate SVHCs from the environment to the greatest extent possible. The Dutch SVHC policy aims to prevent the use of SVHCs in production processes, to minimise SVHC emissions to water and air, and to reduce SVHCs in products.

Dangerous substances in products often do not pose a hazard because they are not released from the product. However, when materials are recycled and given new uses, the hazardous substance can end up in the living environment. This risk may hamper the recycling of a material. This increases the waste problem with dangerous substances. Therefore, a policy to reduce the use of hazardous substances is also considered to be a waste prevention policy, as the definition of waste prevention indicates. In particular, SVHCs are also targeted here.

The Dutch policy is aimed, on the one hand, at reducing the use of SVHCs, in particular by means of legislation and regulations, supported by tools for businesses and competent authorities. On the other hand, where SVHCs are already present in products, the policy is aimed at allowing the recovery of waste from those products, as long as it ensures that risks to humans and the environment are negligible. This avoids the need for low-quality processing of waste streams (incineration or landfill).

Measures description

Source approach
The national SVHC emission policy is based on a source approach: the use of SVHCs in production must be prevented and, if that is not possible, emissions must be avoided as far as possible. This minimisation requirement for SVHCs in discharges and emissions also encourages the substitution of SVHCs in production processes with less hazardous substances, where possible. The Netherlands is in line with REACH for the source approach for SVHCs. If the SVHC character of a substance is determined in accordance with the procedure established under REACH and it is placed on the candidate list, a phase-out or restriction pathway for the marketing and use of these substances can be initiated under REACH.

Safe design
Producers can prevent undesirable environmental and health impacts by taking into account environmental risks in the use, waste and subsequent use (after recycling) stages, already at the design stage of products. To this end, the implementation programme includes a line of action called Safe-by-Design. The Cabinet is committed to working together in the chain to design safe alternatives for substitution of SVHCs. Training and teaching material is also being developed, including for the CIRCO programme. *Safe-bydesign* is about avoiding risks in a broad sense, but SVHCs are given extra attention due to their risk profile.

Information on SVHC in waste
If new products are made from waste, exposure to risk substances present in the recycled material may occur. In order to avoid this, knowledge on the presence of such risk substances is first and

72 These are substances that are dangerous for people and the environment because they are, for example, carcinogenic, hinder reproduction or accumulate in the food chain. These include, for example, certain pesticides that have been banned for several decades ago, but also substances that have been recently used or are still used to impart a certain quality (service life, flexibility, fire resistance, colour, etc.) or functionality (lighting, current, conveying water and grease, etc.) to materials and products.

73 Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (OJ 2006, L 396).

foremost needed. This is particularly important for present SVHCs. An inventory of SVHCs present in waste streams, carried out by the Ministry of Infrastructure and Water Management in 2019, will be further extended in the coming years. In addition, the European Chemicals Agency (ECHA) has set up a database requiring suppliers to notify SVHCs on the candidate list in their products (above a concentration of 0.1% w/w), based on a new provision in the WFD. This obligation applies from the beginning of 2021 and may increase the exposure to SVHCs in certain waste types.

Risk analysis before application
Once the risk substances in a recoverable material have been identified, risk analysis may be necessary to determine whether the processing operation does not present an unacceptable risk of exposure. The current policy objective is to ensure recovery, including recycling, for as many waste as possible where this can be justified. To this end, the LAP3 and related guidance clarifies the condition that the material in question does not, overall, lead to adverse effects on the environment or human health.[74] This is one of the conditions for the end-of-waste status of a material. The end-of-waste status is required for the material to be marketed as a product.

LAP3 elaborates the necessary risk analysis for the recycling of SVHCs or other material that can be usefully applied. If existing techniques allow the removal or destruction of SVHCs from a material to be recycled, this must be done. If such a technique is not available, it should be ascertained whether the risk associated with the intended application of the material is negligible.

3.4 Reuse and repair

Giving products a longer lifespan by reusing them or making them easier to repair directly contributes to reducing the amount of waste and the amount of raw materials needed. The promotion of reuse and repair is part of the ambitions translated into the Raw Materials Agreement and the resulting transition agendas, in particular the transition agendas for consumer goods and manufacturing encourage systems and business models that stimulate reuse and repair. Re-use is also envisaged in the Construction Transition Agenda through knowledge on materials and modular constructions. These efforts are strengthened by the government purchasing circular products itself. This should contribute to the creation or enhancement of markets for sustainable and circular products and services. Various measures are used to encourage the extension of life through repair and reuse. This includes, in particular, research and knowledge sharing, procurement policy and funding.

<u>Measures description</u>

Circular design
Circular design is encouraged by the RPCE, among other things, with the CIRCO programme. The CIRCO methodology provides guidance for business operators to design their product and/or service and business model in a circular way. Through (re-)design of products, services and business models, re-use and repair may be taken into account in the design. For example, there is now an entire module which needs to be replaced, while only one part of the module is delivered. Municipalities, industry associations and knowledge associations, among others, can offer the CIRCOs methodology to companies in their network.

Circular procurement
The Government, through its commitments in the Green Deal, is committed to circular procurement in order to initiate and scale up circular procurement pathways and to make publicly available the knowledge gained during that process. For example, *refurbishment* equipment was made an important step on the procurement side by adding it as an option in the nation-wide procurement strategy for ICT equipment (MBO, 2018). The lessons learned from the circular office facility procurement process of Rijkswaterstaat were also shared and available via the Procurement Centre of Expertise of the Ministry of Economic Affairs and Climate Policy (PIANOo). The State is also committed to removing any identified barriers to circular procurement, for example in legislation and regulations. The government also shares the knowledge and insights gained on circular

74 For the condition, see Article 1.1(8) of the EMA.

procurement with comparable foreign circular economy learning networks and provides knowledge and insight on this Green Deal.

Pilot circular craftspeople centres
The RPCE aims to have a network of circular craft centres that covers the country by 2030. The idea behind a circular Craft Centre is one single point where citizens can find their belongings for reuse, repair or recycling. It is a place where product reuse is high, for example by connecting a thrift store, a repair shop and a recycling centre. This will allow the product life to be extended and unnecessary discarding of raw materials and materials to be prevented. Within the 'From Waste to Raw Materials' programme (VANG) Household Waste, the support of pilot projects will explore how the various building blocks of a circular craftsmanship centre can best work together.

Repair Cafés promotion
Repair Pubs are free-of-charge (jointly) repair meetings. Tools and equipment are available on the site where the Repair Café is held to carry out all possible repairs on, for example, clothes, furniture, electrical appliances, bicycles and toys. Expert volunteers will also be present, with various areas of repair knowledge and skills. The number of café locations affiliated to the Repair Café Foundation increased from 160 to 668 in the period 2013-2017. Project funding is provided by the Ministry of Infrastructure and Water Management for the development of the so-called RepairMonitor. This monitor provides an insight into the level of reparability of products by third parties, non-professionals, such as Repair Cafés. Repair Café International Foundation and partners are joining forces with manufacturers, politicians and consumers. This should lead to better products that fit the circular economy.

Reuse in construction
Construction is an important sector in the Dutch economy, consisting of the residential, non-residential and infrastructure sub-markets. Within the construction transition agenda, the government and market participants work on the materials passport, among other things. A materials passport provides information on the quality and origin of materials. This will facilitate re-use in the event of demolition or renovation. In the Concrete Agreement, producers, contractors and contractors have agreed to cooperate extensively on sustainability. Concrete can be reused by designing concrete structures in a way that takes future changes in use into account as much as possible. A demountable concrete structure can also be designed, the elements of which can be reused. Rijkswaterstaat, for example, purchased a modular viaduct. The viaduct is mounted in parts, to serve temporarily as a work viaduct. After completion of the project, the viaduct is taken apart and reassembled elsewhere. This prevents the construction and subsequent demolition of 'fixed viaducts' and leads to substantial material savings.

3.5 Food waste

Reducing food waste improves the utilisation of biomass and improves the quality of its utilisation, reduces waste and contributes to food security. In particular, food waste prevention focuses on chain cooperation and social guidance, supported, where necessary, by legislation and regulations that contribute to a circular economy or the approximation of laws and regulations that hinder the reduction of food waste.

The focus of Dutch food waste reduction policy is (1) to prevent food waste, (2) to minimise the amount of food waste and (3) to use food waste occurring in accordance with the food use hierarchy (Moerman's ladder). Food chain actors are encouraged and encouraged to use this hierarchy to give the highest value to their secondary resources.

There has been a strong increase in the awareness of food waste in recent years. The Circular Economy Task Force in Food was established in 2017. The Food Waste Prevention Programme of the Netherlands was developed in 2018: the 'National Agenda for Combating Food Waste'. In this national agenda, government, businesses and public organisations join forces to achieve a joint goal of halving food waste per capita by 2030 compared to 2015, in line with the United Nations *sustainable development goal* of 12.3.

<u>Measures description</u>
The Circular Economy Task Force in Food was transformed into the Stichting Samen V. Verspilling (Foundation Against Food Waste) in late 2018, bringing together almost 100 different parties who joined forces to work together to prevent and reduce food waste. A key ambition and legitimacy for the establishment of the Foundation is the need to speed up the actions started, identify and remove barriers, and to achieve economic and social impact.

The National Agenda for Working together against Food Waste is the Netherlands Programme for the Prevention of Food Waste and consists of four lines of action. More concretely, four main lines of action have been set out in the Agenda. Within the above lines of action, several measures are taken:

1. Monitoring & Impact: measuring progress quantitatively;
2. Together against food waste in the chain: joining forces, network and knowledge to improve the implementation of (existing) solutions;
3. Together, Tackling food waste in consumers: sustainable behaviour change in households;
4. Changing the rules of the game: initiate or change legislation and tools to help develop the circular economy.

Line of Action 1 Monitoring & Impact
Food Waste Update Monitor 2009 - 2018
The amount of food wasted in our country did not increase or decrease between 2009 and 2018. This is evident from the Food Waste Monitor Update, which maps the situation from waste and feed statistics. The government and industry have taken several steps since 2018 to reduce food waste. However, it is too early to see the impact in figures. It will also use data from companies, by sector, as from next year. The figures are no longer just for final flows and this leads to more precise estimates of how much food is wasted. This will provide a much better insight and concrete points of reference where any waste can be dealt with directly. This is in line with the EU requirements and measurement methodology that requires Member States to deliver data on (levels of) food waste in 2020 by 2022. Last year, food waste among consumers fell sharply by 29% over nine years.[75]

Line of Action 2 Together against food waste in the chain
Hospitality
A large-scale approach to reducing food waste in the HORECA sector was launched in 2019. Caterers, hotels and restaurants are helped with concrete solutions in their kitchen. Good results were achieved: during the Food Waste Challenge participants achieved a 21% reduction in food waste. These figures will be included in the Food Waste Monitor. In 2020, the approach continues with a second Food Waste Challenge and a *challenge* specific to party and event caterers.

Voucher scheme
In 2019, the Voucher Scheme was opened up to companies, allowing them to obtain tailor-made advice in a low-threshold way. Businesses can apply for a voucher (up to a maximum of EUR 15 000, ex VAT), with at least the same amount in cash. The solutions/innovations identified are actively shared with other businesses and lead to reduced food waste.

Line of Action 3 Together, Combating food waste in the consumer
Consumer campaign #waste-free - 2020 sustainability theme
The #WasteFree Consumer Campaign, launched in 2019, continued in 2020 with a focus on sustainability. Improving the way forward with the best-before dates can help an average Dutch citizen to waste around 5 kg of food each year. Almost half of the Dutch have the difference between Best Before (THT) and Te Gebruik Tot (TGT). To further increase awareness among Dutch people, in 2020 the #Waste-free campaign continued with TV and online attention, explaining the two tenability dates with tips on how to deal with them.

No waste week
The second edition of the #WasteFree Week took place from 1 to 7 September 2020. The aim is for more Dutch consumers to be inspired and take action to become even more '(#) waste-free'. For example, by taking part in the various *challenges*. More than 40 batches have taken action to help the consumer to reduce food waste with tools such as the Dining Bowl, refrigerator and freezer stickers, information and inspiration. More than 1 000 000 tools were distributed to consumers.

Line of Action 4: Changing the rules of the game
An inventory of the legal and other obstacles to reducing food waste was carried out in cooperation with businesses, civil society organisations and experts. Impact and feasibility were considered. A top 10 of the most promising options for changing the rules were made.

75 Parliamentary Paper 31 532, No 242.

3.6 Litter

The Litter Policy aims to protect the environment (soil, water and seas), preserve circular economy raw materials and ensure a liveable and clean public space. Various stakeholders — municipalities, other area managers (e.g. provinces, water boards and Rijkswaterstaat), producers and citizens — have a role to play in preventing and clearing up litter. Work is ongoing, together with stakeholders on land and water, to identify the issue and impacts, and to address them through the most effective measures aimed at preventing and clearing up litter. Measures to prevent and reduce litter are wide and include monitoring, research and innovation, laws and regulations, extended producer responsibility, agreements, information and education, behavioural influence, improved product design, public space design (litter bins), cleaning and enforcement.

Measures description

Land and water monitoring
To measure how clean the Netherlands is, Rijkswaterstaat carries out the 'national litter monitor'. It also measures the perception of citizens. Marine litter is monitored by Rijkswaterstaat within the framework of the Marine Strategy Framework Directive (MSFD).[76] The monitoring of litter that washes up on beaches provides a picture of the composition, quantities (numbers), and possible sources of the litter. The plastic particles found in the stomachs of the Nordic Storm Bird (Fulmar) are also checked. Seabed waste is also monitored by counting and categorising waste collected during a regular fishery survey. Monitoring of litter in and along rivers and monitoring of microplastics is also ongoing.

Comprehensive approach
In the Netherlands, a comprehensive approach is taken whereby different parties contribute to the prevention and clearing of litter. Municipalities and other area managers are responsible for keeping their areas clean. In addition, municipalities have the power to require sales outlets to clean up litter and place rubbish bins and to impose local bans, for example on launching balloons or using disposable plastics (plastic cups) at events.

From the State, area managers are supported by making the knowledge and expertise of Rijkswaterstaat available. The Waste at School and VANG Non-Home Care programme is dedicated to education on litter and other waste as well as to reducing waste in education. Furthermore, companies are obliged to keep their business environment clean.[77] The government also concludes agreements with other parties to Green Deals that aim to reduce litter.

Extended producer responsibility
The extended producer responsibility (EPR) tool is a component of waste prevention and efficient waste management. Packaging producers are already financially or organisationally responsible for managing the waste phase of the packaging they have placed on the market. Directive (EU) 2019/904 extends these obligations and adds EPR for new plastic products (balloons, tobacco products, wet wipes and fishing gear). Producers of products that contain plastics are responsible for bearing the costs of cleaning up litter from their products. This is expected to reduce the amount of litter from these products.

Laws and regulations
In the Netherlands, there is a ban on the free distribution of plastic carrier bags. A 2019 review by Rijkswaterstaat found that the number of plastic carrier bags in litter has decreased by around 60% since 2015. In addition, the Packaging Management Decree 2014 provides for a deposit system for plastic bottles. This will be extended with small plastic bottles. The legal objective is to return 90% of plastic bottles, small and large. In addition, measures are being taken to further reduce litter as part of the implementation of Directive (EU) 2019/904.

Contracts
In the Packaging Framework Contract 2013-2022, municipalities, the packaging industry and the State have agreed to reduce the environmental impact of packaging through prevention and

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76 Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for Community action in the field of marine environmental policy (Marine Strategy Framework Directive) (OJ 2008 L 164).

77 The so-called 25-metre rule states that companies must clean up litter from their own company within a radius of 25 metres around the establishment themselves. https://kenniswijzerzwerfafval.nl/sites/default/files/factsheet_25-meterregel.pdf.

recycling. Under this framework contract, the packaging industry provides EUR 20 million per year to municipalities to address packaging litter. Through the Stichting Nederland Schoon Foundation, producers support municipalities and carry out public campaigns, such as the Supporters movement of Schoon and the Landelijk Schoonday.

In the National Plastic Pact, more than 60 organisations made voluntary arrangements to further and accelerate the reduction of unnecessary use of plastic, to improve product design, to increase the share of recyclate and to improve and scale up the collection, sorting and recycling of plastic. The target is that plastics made of recyclable plastics will be 2025. 20% less plastic should be used in 2024 than in 2017. Part of the actions focus on prevention and reusable packaging. In addition to the national government, supermarkets, plastic producers, environmental organisations, recyclers and financial institutions are among the participating parties. As a result, a European Plastic Pact has also been concluded. Cross-border cooperation adds momentum to innovation and upscaling circular initiatives and norms, standards and monitoring can be further harmonised.

With the Plastic Promise, the State has made agreements with other partial calibration to prevent litter. This includes the agreement of festival organisers and food and beverage groups to switch as much as possible to reusable cups and deposit systems in order to completely eliminate litter at festivals.

With the Green Deal on Cleaner Beaches, several organisations and municipalities are committed to making and maintaining their beaches. The aim of this green deal is to achieve structurally cleaner beaches, better collaboration between parties, and better waste behaviour from beach visitors.

Additional measures for the sea and rivers
For the implementation of the KRM, a package of measures for the North Sea is implemented consisting of six clusters: setting agendas and raising awareness, beaches (such as the Clean Beaches Green Deal), river basins (such as the Litter Collection Scheme from Rijkswaterstaat), maritime shipping (such as the implementation of the Port Reception Facilities Directive in the Prevention of Pollution from Ships Act), fisheries (such as the Fisheries Green Deal), and plastic products (such as voluntary reduction of emissions of microplastics in cosmetics). For rivers, a monitoring strategy, the mapping of plastic litter hotspots, the development of pilots and testing of capture systems, an approach to discard behaviour around river banks and an approach involving river bank managers and users is being further developed.

Microplastics
Litter on land and at sea is the largest source of microplastics. But industrial littering of plastic pellets is also a source of microplastics in the surface water. In addition, microplastics can end up in the water due to wear of, for example, car tyres, paints and clothing. Finally, microplastics enter the water by being added to products such as cosmetics and abrasive cleaners. The policy programme on microplastics is aimed at reducing emissions of microplastics. It includes monitoring and research on health effects. Working with the sectors is ongoing to develop effective measures at EU and national levels to prevent and reduce microplastics in the environment, such as tyres, cosmetics and textiles.

3.7 Information and awareness-raising

In general, waste prevention-related campaigns aim to raise consumer awareness of the environmental impact of waste while offering a commercial perspective with more sustainable alternatives. The PBL study ‘A circular economy mapping’ shows that there are many businesses and organisations in the Netherlands that contribute to the circular economy.[78] In total, around 85 000 activities were already carried out in 2019. Information and communication activities to promote awareness of waste prevention, repair and re-use are often carried out on a project-by-project basis and on behalf of the sector itself. The Dutch government occasionally supports financially in specific campaigns and develops its own campaigns. The Ministry of Infrastructure and Water Management and Rijkswaterstaat applies and further develops behavioural knowledge in the programmes on litter, household waste and business waste. Focus areas related to waste prevention include sustainable consumption and undertaking, reuse and repair, food waste and

78 Netherlands Environmental Assessment Agency, Circular Economy map, PBL publication number 3401, Publishing PBL, 2019.

litter. Measures include information and campaigns, research on behavioural influence, knowledge transfer on communication and behaviour, and extended producer responsibility.

Measures description

Information and campaigns

Practical information on waste prevention is provided to consumers via Milieu Centraal. The Nutrition Centre also provides structural training on food waste. The additional broad ‘Doing What’ campaign aims to help citizens make their living environment more sustainable. Food waste and reuse are important topics. A communication approach to prevent littering is also being developed.

Behavioural knowledge

Through the VANG Household Waste programme, the National Government is working with municipalities on waste separation, waste prevention and the closing of chains. This programme contributes, among other things, to reducing the amount of household waste. The Waste at School programme focuses on the education and reduction of waste in schools. The VANG Outdoor Waste Programme focuses on reducing waste from the service sector. Behavioural insights from science are applied here in practical projects. Knowledge is shared with professionals in municipalities, schools and businesses through courses and online tools and knowledge products.

Agreements and producer responsibility

Voluntary agreements are made with businesses and civil society organisations, which often include information campaigns, such as food waste. Manufacturers of packaging are also required to take awareness-raising measures on the basis of the Packaging Management Decree. The Clean Fan movement and the Clean Day of the Netherlands Foundation are an example of this. For single-use plastic products, the implementation of Directive (EU) 2019/904 imposes on producers the obligation to also cover the costs of informing consumers about the availability of reusable alternatives, the environmental impact of littering and appropriate waste management systems.

4. Description of measures in Annexes IV and IVa of the WFD

Annex IV of the WFD gives examples of waste prevention measures and Annex IVa gives examples of economic instruments and other measures to implement the waste hierarchy.

In accordance with the requirements of Article 29 of the WFD, the measures taken by the Netherlands with respect to Annexes IV and IVa are described when the APP is set. The usefulness of the examples given in Annex IV was considered as part of this. The measures listed in Annex IVa have also been identified and described where appropriate. This chapter outlines the relevant waste prevention measures in place in the Netherlands.

4.1 Examples of waste prevention measures

A summary of the waste prevention measures taken by the Netherlands as listed in Annex IV of the WFD is presented below. The purpose of the measures is considered in this context by describing their contribution to waste prevention. The examples of waste prevention measures are described in Annex IV:

- framework conditions for waste prevention
- design, production and distribution stage
- consumption and use phase

As regards the framework conditions for waste prevention, the Netherlands is establishing economic instruments that contribute to waste prevention. These are in particular grants resulting from the Promotion of Research and Development Act (WBSO), Small Business Innovation Research (SBIR) and Demonstration Energy and Climate Innovation (DEI+) Circular Economy. The conditions of grant support provided herein promote direct research and development on less wasteful technologies. Furthermore, the increased waste tax has an indirect impact on waste prevention in companies and municipalities. Making waste streams more expensive at the back of the chain creates ‘chain pressure’. At the same time, it creates a more favourable investment climate for entrepreneurs by knowing where they stand. This stimulates innovation and is more likely to invest in, for example, alternative product designs or production processes and technologies where no or less waste is produced. Finally, the RPCE monitoring programme, through the Circular Economy Monitoring and Guidance Work Programme 2020, is working on indicators, which include the translation into environmental pressures, but also, for example, monitoring the transition to circularity.

Circular design and business models are supported through the CIRCO programme for the design, production and distribution phases. The law also stipulates that permits must include provisions aimed at the economical use of raw materials and the prevention of waste. Knowledge about circular business and waste prevention is available for SMEs through the VANG Buitenlands, the Ondernemersplein website and the Gearbox. Finally, agreements with stakeholders are an important tool in the Policy. Well-known examples are the Commodities Agreement and the Plastics

Pact. Voluntary agreements help to prevent waste by creating or maintaining support and involvement from the sector to engage in waste prevention.

The consumption and use phase measures listed in Annex IV aim to raise awareness and provide a trading perspective for consumers and businesses. The PBL study ‘A circular economy mapping’ shows that in the Netherlands, many businesses and organisations contribute to the circular economy. In total, around 85 000 activities were already carried out in 2019. The promotion of reuse and repair is supported by Repair Cafés and the development of circular crafts centres in municipalities. Public procurement also boosts the market for circular products and services.

4.2 Examples of measures to implement the waste hierarchy

Annex IVa of the WFD lists economic incentives and other measures that can contribute to waste prevention. Where applicable, this annex explains the deployment of these incentives in the Netherlands and the contribution to waste prevention. The measures are divided on the basis of the elements of Annex IVa:

- economic instruments (levies, taxes, subsidy, sections 1-3, 8-9, 12) • EPR and deposits (sections 4-5)
- Circular procurement (section 7)
- research and innovation (strand 10)
- waste management infrastructure (Components 6, 11)
- information, communication and cooperation (Sections 13-15)

The measures listed in Annex IVa are often aimed at guiding waste prevention by making it directly or indirectly financially or organisationally more attractive to chain parties. Awareness raising among the general public is also addressed. The contribution to waste prevention per topic is explained below.

Of the economic instruments mentioned, the Netherlands focuses on waste taxation and tax advantages for waste prevention, such as investments in environmentally friendly and resource-efficient assets. There are also financial incentives for food donations. Donations to food banks are deductible for tax purposes in various ways. This applies to both unsaleable products and saleable products.

In the Netherlands, extended producer responsibility has been introduced for various product streams. The EPR policy encourages links between parties in the chain.
The reuse of materials and waste prevention are encouraged by the responsibility of producers for their products at the waste stage.

Deposit fees encourage consumers to return their used packaging and products to authorised sales and collection points. Reuse and recycling within their own product chain contribute to waste prevention by reducing the amount of new, *virgin* raw materials that need to be used to produce new packaging and raw materials.

The government encourages waste prevention by purchasing more circular ones. Boosting circular purchasing also saves waste, and creates or enhances new markets for sustainable and circular products and services.

There are several grant schemes that financially support research and innovation in recycling technologies. This increases the recycling potential and thus the opportunities for producing secondary raw materials, resulting in less waste ending up in the waste heap.

A tool used to promote the use of available techniques for
Waste treatment and investments in waste management infrastructure are tax schemes such as the MIA and Vamil schemes. This allows businesses to invest fiscally in environmentally friendly technologies. Many collection, recycling and waste separation facilities are eligible. Such investments contribute to closing cycles and achieving a higher quality of waste processing, thus reducing the use of primary raw materials.

Consumer information on waste prevention is provided through the Milieu Centraal (Environment Centre) and the Nutrition Centre (Voedcentrum). Through the VANG Household Waste programme, the National Government is working with municipalities on waste prevention, waste separation and the closing of chains. The Waste at School and VANG Non-Home Care programme is dedicated to education and reduction of waste in education. This communication raises awareness and behavioural change in waste prevention among different actors in the chain, such as businesses, citizens, collectors, waste processors and local authorities. As regards cooperation in the transition to a circular economy, the Cabinet is in continuous dialogue with stakeholders, for example through the Raw Materials Agreement and the transition agendas, and as described in this waste prevention programme, waste prevention is an integral part of this.

Annex I: Display of Articles 29 and 9, and Annexes IV and IVa of the WFD

This Annex reproduces Articles 29(1) to (2) bis, 9(1), Annex IV and Annex IVa of the WFD.

Waste prevention programmes: Article 29(1) to (2)(a)

1. Member States shall establish waste prevention programmes that describe at least the waste prevention measures set out in Article 9(1) in accordance with Articles 1 and 4.

Such programmes shall be integrated either into the waste management plans required by Article 28 or into other environmental policy programmes, as appropriate, or shall be self-contained. If such a programme is integrated into the waste management plan or into these other programmes, the waste prevention objectives and measures must be clearly identified.

2. When establishing these programmes, Member States shall describe, where relevant, the contribution to the prevention of waste from instruments and measures listed in Annex IVa and evaluate the usefulness of the examples of measures or other appropriate measures listed in Annex IV. The programmes also describe the waste prevention measures and their contribution to waste prevention.

Such objectives and measures should aim to decouple economic growth from the environmental impacts associated with the generation of waste.

2a. Specific food waste prevention programmes shall be established by the Member States as part of the waste prevention programmes referred to in this Article.

Waste prevention: Article 9(1)

1. The Member States shall take measures to prevent the generation of waste. These measures include at least the following:

a) promote and support sustainable production and consumption models;
b) encourage the design, manufacture and use of products that are resource-efficient, durable (including in terms of lifespan and the absence of planned obsolescence), reparable, reusable and upgradable;
c) identify products that contain critical raw materials to prevent them from becoming waste;

d) *encourage the re-use of products and the introduction of systems encouraging repair and re-use activities, in particular for electrical and electronic equipment, textiles and furniture, as well as packaging, construction materials and products;*
e) *encourage, where appropriate and without prejudice to intellectual property rights, the availability of spare parts, manuals, technical information or other tools, equipment or software enabling the repair and reuse of products, without compromising their quality and safety;*
f) *reduce waste generation in processes related to industrial production, mineral extraction, the processing industry and construction and demolition, taking into account best available techniques;*
g) *reduce the generation of food waste in primary production, processing and manufacturing, retail and other food distribution, restaurants, catering and households as a contribution to the United Nations Sustainable Development Goal of halving food waste generation per capita at retail and consumer levels by 2030 and reducing food loss throughout the production and supply chain;*
h) *encourage food donations and other redistribution for human consumption, prioritising human use over animal feed and reprocessing into non-food products;*
i) *promote the reduction of the content of hazardous substances in materials and products, without prejudice to the harmonised legal requirements concerning those materials and products adopted at Union level, and ensure that any supplier of an article as defined in point (33) of Article 3 of Regulation (EC) No 1907/2006 of the European Parliament and of the Council (1) transmits to the European Chemicals Agency the information pursuant to Article 33(1) of that Regulation as from 5 January 2021;*
j) *reduce the generation of waste, in particular waste that is not suitable for preparing for re-use or recycling;*
k) *identify the products that constitute the main sources of litter, particularly in the natural and marine environment, and take appropriate measures to prevent and reduce litter from those products. Where Member States decide to implement this obligation through market restrictions, they shall ensure that such restrictions are proportionate and non-discriminatory;*
l) *aim to halt the production of marine litter as a contribution to the United Nations' sustainable development goal to prevent and significantly reduce marine pollution of all kinds; and*
m) *develop and support information campaigns to raise awareness of waste prevention and littering.*

Examples of waste prevention measures: Annex IV

EXAMPLES OF WASTE PREVENTION MEASURES REFERRED TO IN ARTICLE 29 Measures that may affect the framework conditions related to the generation of waste

1. *Implementation of planning measures or other economic instruments promoting the efficient use of raw materials.*

2. *Promoting research and development to achieve cleaner and less wasteful technologies and products, and disseminating and applying the results of research and development in this field.*

3. *Development of relevant and effective indicators of environmental pressures related to the generation of waste, which should contribute to the prevention of waste generation at all levels, from product comparisons at Community level, to actions taken by local authorities.*

Measures that may affect the design, production and distribution stage

4. *Promotion of 'eco-design' (the systematic integration of environmental aspects into the design of a product in order to improve the environmental performance of the product throughout its life cycle).*

5. *Provide information on waste prevention techniques to facilitate the application of best available techniques by the business community.*

6. *Training of the staff of the competent authorities on the inclusion of waste prevention requirements in licences under this Directive and Directive 96/61/EC.*

7. *Inclusion of waste prevention measures in installations not covered by Directive 96/61/EC. Where appropriate, these measures may include waste prevention reviews or plans.*

8. *Use of awareness-raising campaigns or provision of financial, decision-making or other support to companies. It is recognised that such measures will be particularly effective if they are tailored and adapted to SMEs, and make use of existing business networks.*

9. *Use of voluntary agreements, consumer/producer panels or sector consultations to make sure that the companies or industrial sectors involved are in-house*

Define waste prevention plans or targets or take measures to put a stop to waste generated by products or packaging.

10. *Promotion of credible environmental management systems, e.g. EMAS and ISO 14001.*

Measures that may impact on the consumption and use phase

11. *Economic instruments, such as rewarding clean purchasing behaviour, or the introduction of a consumer mandatory payment for a packaging item or element that would otherwise be provided free of charge.*

12. *Use of awareness-raising campaigns and provision of information to the general public or specific categories of consumers. 13. Promoting credible eco-labels.*

14. *Agreements with industry, such as the use of product panels such as those set up within the framework of Integrated Product Policy, or with retailers regarding the availability of waste prevention information and products with a lower environmental impact.*

15. *In the context of procurement by public organisations and companies, integrating environmental and waste prevention criteria into calls for tenders and contracts, in line with the Handbook on environmental public procurement published by the Commission on 29 October 2004.*

16. *Promoting the reuse and/or repair of eligible end-of-life products or their components, in particular through educational, economic, logistical or other measures such as supporting or setting up accredited repair and reuse centres and networks, in particular in densely populated areas.*

Examples of economic instruments and other measures: Annex IVa

EXAMPLES OF ECONOMIC INSTRUMENTS AND OTHER MEASURES TO PROVIDE INCENTIVES FOR THE APPLICATION OF THE WASTE HIERARCHY REFERRED TO IN ARTICLE 4(3) *(1)*

1. *Landfill and incineration charges and restrictions to promote waste prevention and recycling, while maintaining landfill as the least favourable option for waste management;*

2. *differentiated waste tariffs, which charge waste producers based on the actual amount of waste generated, and provide incentives to encourage separation at the source of recyclable waste and reduction of mixed waste; 3. fiscal incentives for donations of products, in particular food donations;*

4. *extended producer responsibility schemes for different types of waste and measures to improve their efficiency, cost-efficiency and governance;*
5. *deposit systems and other measures to promote efficient collection of used products and materials;*
6. *sound planning of investments in waste management infrastructure, including through Union funds;*
7. *sustainable public procurement to promote better waste management and the use of recycled products and materials;*
8. *phasing out of grants not in line with the waste hierarchy;*
9. *use of fiscal measures and other means to promote the dissemination of products and materials prepared for re-use or recycled;*
10. *supporting research and innovation in advanced recycling technologies and remanufacturing;*
11. *use of available waste management techniques;*
12. *economic incentives for regional and local authorities, in particular to promote waste prevention and strengthen separate collection schemes, while avoiding landfilling and incineration;*
13. *public information campaigns, in particular on separate collection, waste management and litter reduction, and mainstream these issues in education and training;*
14. *systems for coordinating, including by digital means, all competent authorities involved in waste management;*

15. *promoting continuous dialogue between all stakeholders in the field of waste management, and encouraging voluntary agreements and business reporting on waste.*

Annex II: Sources of waste prevention measures Chapter 3

This annex presents the sources consulted for the description of waste prevention measures in Chapter 3. They are listed by section.

National programme 'The Netherlands Circular by 2050', September 2016
Raw Materials Agreement, January 2017
Transition agendas, January 2018
Cabinet response to transition agendas, June 2018
Circular Economy Implementation Programme 2019-2023, February 2019
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Circular Materials Plan Design

Capacity of incineration plants

Participation

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Capacity of incineration plants

Incineration of waste generally takes place in waste incineration plants (WIPs). The Netherlands has more incineration plant capacity than is necessary for the incineration of waste produced in the Netherlands. This section presents the Government's views on this situation.

1. Target audience

The central government's vision on the capacity of incineration plants in the Netherlands is of primary interest to **incineration plant operators**; in line with this, it is also relevant to **incineration plant operators**.

2. Importance for the circular economy

A circular economy aims to keep materials for as long as possible for society. Only if this is no longer possible can waste incineration play a role in its safe disposal. See also [Chapter on thermal processing assessment]. In a circular economy, incineration (and landfilling) is minimised, tailored to domestic needs. Currently, the Netherlands has more incineration plant capacity than is necessary for the incineration of Dutch waste (see Section 3.1 'AVIemissivity capacity in the Netherlands'). With the aim of further reducing the incineration of recyclable materials, this discrepancy between WIP capacity on the one hand and the supply of Dutch combustible waste on the other will only increase further. It is therefore important that the parties know how the (development of) incineration plant capacity in the Netherlands is perceived at national level.

3. Policy and legislation

3.1WIP capacity in the Netherlands

In order to understand this chapter, it is important to clarify what is meant by **Waste incineration plants (WIPs)**. These are facilities that are primarily designed for the incineration of municipal solid waste. They incinerate mainly residual household waste, commercial waste similar to residual household waste and mixed fractions or sorting residues from the processing of these streams or from the processing of construction and demolition waste. These are the 12 facilities listed in Table 1.

The following table shows the 12 Dutch WIPs including their capacities. As the throughput in tonnes depends on the energy content of the waste, the facilities are in fact thermally limited, rather than tonnage. For this reason, the table also includes the thermal capacity.

The total licensed incineration capacity for the 12 Dutch WIPs combined was around 8.2 Mton at the end of 2022. In that year, 7.4 Mton was actually used. The other part of the authorised capacity has not been used, due, among other things, to maintenance and disruptions. The supply of Dutch combustible waste was approximately 6.25 Mton. The other part of about 1.15 Mton came from imports.

Over a period of 7 years (2016-2022), a total of between 5.7 and 6.5 Mton of Dutch waste was incinerated annually in the 12 plants. Fluctuations can be explained by economic developments, variations in the storage of combustible waste, variations in imported combustible waste (variations between 1.1 and 1.9 Mton per year over the period mentioned) and fluctuations in exported waste. This makes it clear that the current 12 Dutch WIPs, together, have a structural and substantially higher capacity than is necessary to process the supply of Dutch combustible waste. This is true even when it is taken into account that maintenance and malfunctions may not ensure that all authorised capacities are actually used. Tabel 1: Overview of waste incineration plants

Waste incineration plant (name and address)	Capacity (kton/yr[1])	Capacity (PJ/jr[2])
EEW Energy From Waste Delfzijl BV; Oosterhorn 38, Farmsum	576	5.68
REC Harlingen; Lange Linecourse 14, Harlingen	280	3.19
Attero Noord BV GAVI Wijster; Vamweg 7, Wijster	719	5.68
Twence Afval and energie; Bolderhoekweg 51, Hengelo	650	6.05
ARN B.V.; Nieuwe Pieckelaan 1, Weurt	310	3.82
AVR Waste treatment BV; Riviera 20 Pigeon	400	3.32
HVC Waste Centre; Jadestraat 1, Alkmaar	675	7.39
AEB Amsterdam; Australia port road 21, Amsterdam	1,350	15.60
AVR Afvalverwerking Rijnmond; Prof. Gerbrandyweg 10, Rotterdam-Botlek	1,300	11.67
HVC Waste Centre; Road section 40, Dordrecht	396	3.54
AEC Moerdijk; Middenweg 34, Moerdijk	1,200	11.54
SUEZ ReEnergy; Potendreef 2, Roosendaal	386	3.92
Total	**8,242**	**81.4**

Notes to the table:

1 This is the continuation in tonnes, assuming 100% availability.
2 Based on the maximum thermal load of all lines combined and on a theoretical availability of 100% per year.

3.2Vision on existing overcapacity

The Netherlands is working hard on the transition to a circular economy by focusing on all stages of materials and products made from them. In addition to efforts to reduce the generation of waste (prevention), the aim is to keep recyclable materials as much as possible from residual waste (source separation) or from recyclable materials (post-separation). It also actively supports new recycling options for streams for which recycling is not yet possible. This means that thermal processing will no longer be permitted for an increasing volume of waste either through the minimum standard in the CMP or through legal bans. The current licensed capacities will therefore further increase the existing space between the available incineration plant capacity and the supply of Dutch combustible waste. In addition, there are several initiatives for other forms of thermal processing that also focus, in whole or in part, on the same waste (see [Section Assessing thermal processing]). This, too, will further increase the difference between the available incineration plant capacity and the supply of Dutch waste for incineration.

This surplus of incineration plant capacity is subject to:

- The maintenance of overcapacity for too long has a chilling effect on domestic initiatives for reuse and/or the development of recycling capacity.
- In addition, waste incineration carries harmful emissions (nitrogen and CO_2) and bottom ash. These emissions and remaining bottom ash also occur in the Netherlands when the overcapacity is filled by importing waste to be incinerated here in the Netherlands. Imports of waste to WIPs therefore mean that the emissions and bottom ash from waste from other countries end up in the Netherlands. Given the wider national climate commitments, the Netherlands, as a country that incinerates foreign waste, will need to offset these emissions elsewhere in the economy. The incentive is missing in the other countries, as they can actually export their CO_2 emissions and bottom ash to the Netherlands in this way. This also reduces their incentive to improve the quality of their own waste treatment according to the waste hierarchy of Article 10.4 of the Environmental Management Act and the starting point of local processing and self-sufficiency referred to in Article 16 of the Waste Framework Directive.

A further increase in Dutch WIP capacity is therefore not considered effective from the point of view of a circular economy and with a view to reducing the soil and nitrogen and CO_2 emissions attributed to the Netherlands. In the longer term, the Netherlands is aiming for an incineration plant capacity that (with a bandwidth) is needed for Dutch waste to be incinerated. This capacity will decrease compared to the current situation.

4. CMP assessment frameworks

In the previous section, the Government's vision is that we now have more incineration capacity than we need for Dutch combustible waste. It also addressed their expected development and the Government's vision on this. Competent authorities should take into account that:

1. The Netherlands is aiming for an incineration plant capacity that is required (with a bandwidth) for Dutch waste for incineration.
2. The Netherlands already has more incineration plant capacity than is necessary for the incineration of Dutch waste, and;
3. the existing imbalance between existing incineration plant capacity and the necessary incineration plant capacity will only increase in the future.

In any case, this means that competent authorities:

- actively raise awareness of these three issues among permit holders of existing facilities or initiators of new initiatives;
- assess for each initiative whether or not there is room for additional capacity in the Dutch market;
- taking as a starting point that any expansion (in tonnes or thermal) of incineration plant capacity compared with the table in Section 3.1 'Incineration plant capacity in the Netherlands' would, in principle, be ineffective; and
- when connecting incineration plants to, for example, district heating networks, make precautions to ensure that switching to an alternative heat source is possible and the heat coupling can never be a reason to keep waste incineration plant capacity in use that is not actually needed on the basis of the Dutch waste market.

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

For this chapter, the Netherlands is ultimately aiming for a capacity for incineration that is, with a certain bandwidth, in line with the Dutch combustible waste supply. This means that further expansion of the incineration plant capacity is not considered effective. The aim is also to achieve, in a follow-up phase, an effective gradual phasing out of the authorised incineration capacity in line with the picture of the transition to a circular economy. In all cases, it must be ensured that Dutch combustible waste which cannot be reused or recycled is free of risks to the environment and human health. This also means that consideration must be given to maintaining sufficient buffer capacity to deal with a major and long-term disaster in a Dutch waste incineration plant. These arrangements can be agreed with the competent authorities and the companies with WIPs. The capacity of WIPs will be reduced by means other than CMPs. The CMP will be adapted to this in due course.

Increasing efforts by the Netherlands to achieve self-sufficiency in the incineration of municipal waste will have consequences for the possibilities of importing and exporting combustible waste. The room for imports will then decrease, and work will continue in parallel to phase out their own exports. If the transition to self-sufficiency were to be supported by proactively limiting imports and exports, this will be considered. The CMP will then be updated accordingly.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Decentralised rules

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Decentralised rules

Decentralised rules are those drawn up by municipalities, water boards and provinces. This helps to ensure good waste management and the transition to a circular economy. In this chapter, local authorities are invited to set out rules and the assessment frameworks in the CMP for which they should take into account.

The Environmental Management Act (Wm) and the Environment Act (Ow) require or allow local authorities to regulate various topics that contribute to a circular economy. The most important ones are described in this chapter. These are:

- Waste prevention and reduction of litter
- Separate collection of household waste
- Preventing low-quality processing
- Prohibition of outdoor waste incineration
- Ban on landfilling or transfer of waste outside landfills
- Space for circular initiatives

Section 1 first describes to whom the parts of this chapter are relevant. This is followed by a brief outline of the importance of decentralised rules for the transition to a circular economy. Paragraph 3 then explains the relevant policies and legislation and the possibilities for setting rules for each subject. The assessment frameworks in section 4 set out what public authorities should consider when developing or amending rules. This is mandatory for decentralised waste rules under Article 10.14 WM. The CMP subsequently provides an overview of the expected future developments for this chapter. Finally, the final section contains references to more information on the potential to contribute as decentralised authorities to the transition towards a circular economy.

1. Target audience

This chapter is intended in particular for municipalities and provinces. This is because they have specific legal tasks and powers in relation to waste. Most of the rules in this chapter are the responsibility of municipalities. For water boards, no relevant topics have been identified at this stage.

For **municipalities**, all the topics in this section apply. The sections on waste prevention, litter and household waste are relevant for policy staff on waste and public spaces. This also applies to the originators of the Waste Ordinance and the environment plan. This section is also aimed at drivers and policy staff working in the circular economy.

For **provinces**, at least the section on landfilling or transfer of waste outside landfills applies. They have the legal authority to grant exemptions for household waste. In addition, providing space for circular initiatives is also relevant for provinces, as they can provide frameworks for this in their environmental vision and regulation. The chapter is therefore also relevant to the authors of that vision and regulation. Finally, this section targets directors and circular economy policy officers in provinces.

2. Importance for the circular economy

Local authorities can contribute to the transition towards a circular economy through various policy instruments. For example, by awarding grants for circular initiatives and by purchasing circular yourself. They may also lay down rules. Rules for products and substances are defined at European and national level. Many other environmental rules are laid down at national level. However, municipalities and provinces decide which functions and activities can be authorised in which locations. In doing so, they may draw up rules for the activities of citizens and businesses in those locations. In addition, municipalities have a legal duty of care for household waste. For an overview of the legislation through the design, production, use and processing chain, see the [Legislative overview chapter].

For a circular economy, it is important that people encounter the same type of rules everywhere. This enhances recognition and contributes to desired and circular behaviour, wherever people are in the Netherlands. Therefore, the Environmental Management Act requires administrative bodies to take the CMP into account when setting rules. The legislation defines the tasks and powers for setting rules. The CMP ensures the translation of this into the implementation. It indicates what should at least be included in decentralised circular economy rules and what is desirable or not. For example, to avoid low-grade waste processing.

3. Policy and legislation

This section contains topics for which municipalities and provinces may introduce decentralised rules under the Environmental Management Act and the Environment Act that contribute to efficient waste management and a circular economy. First, it explains the legal impact of the CMP and the different types of decentralised systems that are relevant. It then explains the relevant policies and legislation and the options for laying down rules by subject matter. The assessment frameworks to be considered by public authorities when preparing and amending decentralised rules are set out in section 4 of this chapter.

3.1 Relevant decentralised schemes

Local authorities have tasks and powers to draw up rules in the Local Government Act, the Provincial Law on Water Boards and, in addition, the Environment Act (Ow) and the Environmental Management Act (Wm). Articles 10.14 and 10.29a WMprovide that administrative bodies are to take account of the CMP or the waste (water) hierarchy of the WM when exercising a task or power under the WM or Article 4.1 OW. This obligation applies to the extent that the power is exercised in relation to waste.

The tasks or powers contained in Article 4.1 Owconcern the general rules contained in the environment plan (municipalities), the Water district ordinance (water districts) and the Environment ordinance (provinces). The impact of the CMP is particularly important for the drafting and modification of general and custom-made rules in the environment plan. The authorities should also take the CMP into account when adapting the temporary part of the schemes (the so-called ‘dowry’).

In addition, municipalities should take the CMP into account when drafting and amending the Waste Regulation. This is because the drafting of these rules is a task and competence under the EMA. Article 10.23 WM empowers the Municipal Council to adopt a waste regulation in the interests of environmental protection. The Environmental Management Act sets out the rules that must and may appear in the Waste Regulation (Title 10.4 WM). In any case, this includes rules on household waste and litter, but the Act leaves room for other topics, such as the provision of business waste for collection. The law also leaves room for municipalities to incorporate the rules on waste into the environment plan.

Are these decentralised systems not in line with the assessment framework set out in the CMP? The Municipality will then follow the derogation procedure and inform the Ministry of Infrastructure and Water Management of the intention to deviate. This is how the municipality monitors the legal obligation to provide data (Article 10.14(4) WM). This is described in the [Derogations section].

In the exercise of powers under laws other than the Environmental Management Act and the Environment Act, there is no formal obligation to take the CMP into account. However, in these cases, and in the light of the general principles of good administration, an administrative body cannot ignore the CMP altogether, especially for waste. This means that governing bodies should also take into account the content of the CMP when drafting other schemes. This applies, for example, to the General Local Ordinance (APV) under Article 149 of the Municipalities Act. These rules concern, in particular, public order and security. However, it may also include placing waste containers or burning, storing or reducing waste.

3.2 Waste prevention and reduction of litter

Municipalities may set rules for the prevention of waste and the reduction of litter. For example, on launching balloons and distributing advertisements. This section explains which policies and legislation are relevant for municipalities.

The waste prevention and litter policy aims to protect the environment (soil, water and seas), conserve resources and create a liveable and clean public space. Several parties have a role to play. Think of the State, producers, municipalities and area managers. The Dutch Waste

Prevention Programme provides an overview of the measures taken by the Netherlands to achieve this.

Under Article 10.25of the Environmental Management Act, municipalities may lay down rules on the prevention and cleaning of litter and where waste may be placed. The law does not oblige municipalities to set rules for this, but gives them the authority to do so. The article states that the rules may cover these matters at least. It therefore leaves room for municipalities to lay down further rules as well. It is desirable, but not mandatory, for municipalities to lay down rules on the following topics:

- a ban on dumping waste in public areas;
- preventing and clearing up litter from activities;
- placing bins in operations; • restricting the use of balloons;
- Distributing and cleaning up advertising publications or products.

These rules are often laid down in the Waste Regulations, General Local Regulations (APVs) and Environment Planning Act. The choice is up to the municipalities.

Specifically for cleaning up litter, Article 22.53 is part of the temporary part of the environmental plan (dowry). The article reads: In order to ensure the efficient management of waste, foodstuffs, packaging, sport or game materials or other materials originating from the activity shall be removed as often as necessary within a radius of 25 metres from the boundaries of the site where the activity is carried out. Municipalities may amend these environment plan rules. When amending the rules, they should take into account the review framework set out in [Section 4.1 'Waste prevention and reduction of litter'] of this chapter.

3.3Separate collection of household waste

Municipalities are required to ensure that household waste is collected within the municipality. This is stated in Article 10.21 of the Environmental Management Act (EMA). In addition, Article 10.23 WM gives municipalities the task and power to adopt a waste regulation in the interests of environmental protection. Pursuant to Article 10.24 WM, municipalities must include in the Waste Ordinance at least rules on:

a. transferring or offering household waste for collection to a designated collection section;
b. transferring such waste to another person;
c. the abandonment of such waste at a place provided for that purpose.

It is up to the municipality to choose whether to include the rulesin the Waste Ordinance or in the environment plan. The WM and the Decree on separate collection of household waste set out the obligations for municipalities to collect household waste separately. The Environmental activities decree [Bal] states what a recycling centre must meet.

The [Household waste separate collection section] further explains the legislation for the separate collection of household waste by municipalities. In implementing this legislation and in drawing up decentralised rules in the environment plan or in the Waste Ordinance, municipalities must take into account the assessment framework set out in that Chapter in the CMP.

3.4Preventing low-quality processing

The Municipality may lay down rules in the environmental plan for activities involving waste. The temporary part of the environmental plan (dowry) also contains rules on waste. For the circular economy, at least the rules on silver recovery in photographic development and those on garbage disposal units are relevant. The CMP should be taken into account by the municipalities when amending these rules.

This section explains the policies and regulations related to these topics. In addition to the topics mentioned below, it is also desirable for municipalities to carry out their own research on relevant activities in the municipality. They are also exploring the desirability of setting rules for this through the environment plan. If municipalities develop rules for this, they must take into account the assessment framework set out in [Section 4.3.1 'High-quality processing tests'].

3.4.1 Silver recovery in photo development

Wastewater is released during the development or printing of photographic materials. This waste water may contain silver. Silver is a valuable raw material that should not be lost in a circular economy. The temporary part of the environment plan sets out the rules for discharging this material. The second paragraph of Article 22.190 states: Frowning rollers are used in good condition and an efficient silver recovery facility is used. The third paragraph specifies when a silver recovery plant need not be used[79].

This concerns the recovery of silver waste and its rules in the environment plan. When changing these rules, municipalities should take the CMP into account. The relevant assessment framework is set out in [Section 4.3.2 'Silver recovery in photo development'].

3.4.2 Garbage disposal units and biowaste

A food waste grinder or food waste grinder with addition of water to produce a liquid waste. A company or a private individual then loads this liquid waste to the waste water. This is undesirable and therefore prohibited in the temporary part of the environment plan[80]. It is important that the rules for garbage disposal units in municipalities are aligned with the assessment framework for separate disposal and high-quality recycling of bio-waste. This section explains why and which rules are involved.

The use of garbage disposal units and the discharge of waste water is undesirable for a variety of reasons. The comminuted substances can firstly cause clogging. From a water policy perspective, garbage disposal units are also undesirable, as they increase organic matter in waste water. The Animal By-Products Implementing Regulation also bans the use of animal by-products (such as organic waste) through the
remove waste water stream. Furthermore, the circular economy policy is that bio-waste must be recycled.

The Circular Economy Policy focuses on the recycling of bio-waste to a usable fertiliser or soil improver. The minimum standard in the [Bio-waste plan] is therefore recycling in the form of (fermentation and) composting. Recovering green energy can

It is part of this strategy. Recovery of green energy without recycling of the digestate (e.g. as authorised fertiliser) alone does not meet the minimum standard of processing set out in the bio-waste plan.

The temporary part of the environmental plan prohibits the use of garbage disposal units and the discharge of ground food waste into the sewer. For domestic waste water from garbage disposal units, Article 22.147 states this. A similar prohibition is laid down for companies in Article 22.198(3).

The use of garbage disposal units meeting the following conditions (cumulatively) is not covered by the ban and is therefore allowed:

- Milling waste is disposed of separately from other waste and waste;
- The removed ground food waste is disposed of separately from other waste or water to a processor with the required permit and;
- For example, the processor recycles the milling waste (according to the minimum standard for bio-waste) to a usable fertiliser or soil improver.

If municipalities change the rules prohibiting the use of garbage disposal units in households or businesses, they should take the CMP into account. The assessment framework for the rules in the environmental plan is set out in [Section 4.3.3 'Garbage and food waste disposal units'].

3.5 Outdoor incineration

Outdoor waste incineration is undesirable and in principle prohibited. The local authority may issue rules on this matter. Read here to find out what they are and what they need to be tested against.

79 Discharge requirements develop and print out photographic materials (decentralised rules) Information pointLiving environment (iplo.nl)

80 Discharge rules for professional food preparation (decentralised rules) Information point for the Living Environment(iplo.nl)

Incineration of waste outside dedicated facilities should be avoided. Outdoor waste incineration is not desirable for air quality protection. Large-scale combustion is known to lead to substantial emissions of, among other things, particulate matter. These are very harmful to both the environment and human health. The incineration of waste may also present a hazard if the fire can spread. In addition, waste can almost always be treated in a higher quality manner. This can be achieved at least by incineration in energy recovery facilities, but recycling is often possible.

However, there are conceivable situations where waste incineration is exceptionally considered desirable or acceptable. For example, peace fires or green waste with disease that cannot be transported. The Municipality can assess this on a case-by-case basis and whether it includes rules for this in the environment plan.

The incineration of commercial waste and hazardous waste outside dedicated facilities has been designated as an environmentally harmful activity subject to permit requirements. This is set out in Articles 3.40d and3.40eof the Bal. This means that burning is prohibited in this way unless the company is licensed and meets all requirements.

Outdoor incineration of household waste is also prohibited. This can be found inArticle 10.2Wm. The possibility of the municipality granting an exemption under Article 10.63(1) Wm applies. This concerns only municipal waste that has not yet been collected or delivered and the incineration itself of that waste on the site or elsewhere in the public space.

This will often be waste that has been delivered and therefore an activity subject to permit requirements. Municipalities should take into account the assessment framework for high-quality processing in the CMP when granting permits and waivers. See [materials] for the relevant waste, such as green waste or wood. For the establishment of decentralised rules, they should also take into account the CMP and the assessment framework is provided in [Section 4.4 'Outdoor incineration'] of this chapter.

3.6Landfilling or transfer outside of landfills

Municipalities and provinces can make decisions for landfilling or depositing waste outside landfills. For example, a person might want to use waste to fill a hole in the ground, mute a ditch or touch a embankment. This section explains which legislation is at stake and requires verification of decentralised rules.

Landfill is defined in Article 1.1(1) of the Environmental Management Act (Wm) as 'bringing waste onto or into the soil for the purpose of leaving it'. Landfilling waste outside landfills is undesirable and therefore prohibited. However, there may also be cases of recovery of waste on or in the soil. This can be allowed under certain conditions. Landfilling or recovery is discussed in the [circular economy chapter]. Anyone wanting to put something on or into the ground must always answer this question first. The competent authority must check this when taking a decision on authorisation or exemption.

The dumping or bringing into the soil of commercial waste, hazardous waste and household waste is divided between the Environmental activities decree [Bal] and the Environmental Management Act [Wm]. The dumping of business waste and hazardous waste at a landfill is designated in articles3.84 and 3.85Balas an environmentally harmful activity that is subject to permit requirements. The land application of business waste or hazardous waste is designated as an environmentally harmful activity requiring a permit in Articles 3.40b and 3.40cof the Bal. This means that dumping or putting into the soil is prohibited unless the company has a permit to do so and complies with all the obligations. The Bal also includes rules on the deposition of waste on or into the soil in a number of other places. For example, for the application of soil (Section 3.2.26 Bal, including filling deep pools), building materials (Section 3.2.25 Bal) and fertilisers (Section 3.2.20 Bal, including sewage sludge).

In addition, Article 10.2 WMprohibits the dumping or bringing onto or into the soil of household waste. This is not yet collected or delivered household waste. This is the case if a person wants to leave their own household waste, on their own premises or elsewhere on or in the soil. The Provincial Executive may grant an exemption from this prohibition on the basis of Article 10.63(2) Wm.

In granting these permits and waivers, municipalities and provinces should take into account the assessment framework in the relevant chain and waste plans for the relevant wastes under [materials] in the CMP. They must also take the CMP into account when drafting rules in the environment, environment or waste regulations and set out the assessment framework in [Section 4.5 'Landfilling or transfer onto/into the soil outside of landfills']. Rules should not be set for waste for which and to the extent that exhaustive national rules already exist, such as for the application of soil, dredged materials and building materials.

3.7Space for circular initiatives

The local authority's vision is to develop and protect the area. These choices are reflected in the environment plan. In this section, we explain possible relevant topics for the circular economy.

The municipality can specify the functions and activities it may or may not authorise in each area. It may also lay down rules governing those activities. All the rules in the environmental plan combined should lead to a balanced allocation of functions to locations. This can be achieved by the municipality by:

- Establish rules for activities for all or part of the territory.
- Link job titles with authorised activities (with rules) to locations.

To boost a circular economy, the environment plan enables municipalities to influence desired and unwanted functions and activities. For example, by explicitly allowing certain repair and recycling activities for certain locations. Municipalities can also consider how to accommodate low-risk waste activities for the environment and the surrounding area. It is also possible to set requirements for site developments. For example, with more extensive zoning plans, provinces and municipalities have experimented with setting sustainability requirements for construction activities.

The Municipality must take all the interests involved into account when drafting the Rules. In addition, the instruction rules in the Living Environment (Quality) Decree (Bkl) and possible rules in other administrations, such as provinces, apply. More information on the environment planand the balanced allocationof posts can be found on the iplo.nl website.

4. CMP assessment frameworks

Pursuant to Article 10.14 Wm, administrative bodies must take the CMP into account when performing their duties and exercising their powers in the area of waste. This is explained in [Section 3.1 'Relevant decentralised schemes']. The sections below provide the assessment frameworks for municipalities and provinces when preparing decentralised rules.

Are the decentralised rules not in line with the assessment framework set out in the CMP? In that case, the administrative body shall follow the derogation procedure and inform the Ministry of Infrastructure and Water Management of the intention to deviate. This is how it follows the legal obligation to provide information (Article 10.14(4) WM). This is described in the [Derogations section].

4.1 Waste prevention and reduction of litter

Article 22.53 of the temporary part of the environment plan states that, in order to ensure the efficient management of waste within a radius of 25 metres from the boundaries of the site where the activity is carried out, foodstuffs, packaging, sports or game materials, or other materials originating from the activity, shall be removed as often as necessary.

In any case, municipalities retain this article in their environment plan or waste regulation. They include one or more provisions on cleaning up litter around the boundaries of sites where (environmentally harmful) activities are performed. The municipality may focus these rules on the local situation. This will allow adjustments to the distance within which litter must be cleaned up.

4.2 Separate collection of household waste

The [chapter on separate collection of household waste] explains the legislation for the separate collection of household waste by municipalities. In implementing this legislation and in drawing up decentralised rules in the environment plan or the Waste Ordinance, municipalities must take into account the assessment framework set out in that Chapter in the CMP.

4.3 Preventing low-quality processing

4.3.1 Testing for high-quality processing

The CMP assessment frameworks should be considered when drafting or amending general rules for the environment plan (and to a lesser extent the water board regulation). The assessment framework for high-quality processing is provided by [materials] in the chain and waste plans.

If the municipality, water board or province includes rules on the treatment of waste in a regulation or environmental plan, these must not conflict with the assessment framework for high-quality waste processing in the waste plans. If there is no assessment framework for the specific waste, then the waste hierarchy in [chapter on guidance tools] of the CMP should be assessed.

4.3.2 Silver recovery in photo development

The framework for high-quality processing of photographic waste focuses on recovery of silver as in the waste plan photographic waste. This means that the discharge of silver-containing baths is contrary to efficient waste management. Under Article 22.190(2) and (3) of the temporary part of the environment plan, municipalities must comply with the minimum standard. If they wish to amend this article, they should take into account the assessment framework set out in the [Waste plan photographic waste].

4.3.3 Garbage disposal units and biowaste

The use of garbage disposal units whereby the ground food waste is discharged through the sewer system is not permitted. Pilots are also not allowed. The rules in the environment plan should be in line with the assessment frameworks for high-quality processing set out in the bio-waste plan. Articles 22.147 and 22.198(3) of the temporary part of the environment plan require municipalities to comply with the minimum standard. If they wish to amend this article, they should take into account the assessment framework set out in the [Bio-waste plan].

4.4 Outdoor incineration

Outdoor waste incineration is, in principle, prohibited. All decisions to grant a permit or exemption for the incineration of waste should be assessed against the high-quality processing assessment framework for that waste(s) contained in the CMP. This also applies to any rules in the environment plan or waste regulation. The assessment frameworks are found in the chain and waste plans of the different waste types. If there is no assessment framework for the specific waste, then the waste hierarchy in [chapter on guidance tools] of the CMP should be assessed.

Exceptions are only possible in the following cases:

- incineration of green waste with disease that cannot be transported;
- burning clean waste wood or green waste in campfire, fire baskets or peace fire.

The assessment framework for the incineration of off-site waste or outdoor household waste incineration is in line with the general policy expressed in the CMP for the incineration of waste:

- The incineration of recyclable waste should be avoided.
- If waste is incinerated, the energy content and emissions must be reduced.
- Therefore, the incineration of waste outside plants and outdoors is in principle prohibited.
- Incineration of hazardous waste outside plants or outdoors must never be permitted.

The CMP should be taken into account by the municipalities when preparing decentralised rules. Are the decentralised rules not in line with assessment frameworks for high-quality processing or the waste hierarchy? In this case, except for the exceptions described above, the Municipality will follow the derogation procedure and inform the Ministry of Infrastructure and Water Management of the intention to deviate. This is how the municipality monitors the legal obligation to provide data (Article 10.14(4) WM). This is described in the [Derogations section].

4.5Landfilling or transfer outside of landfills

The assessment framework for landfilling or other transfer onto or into the soil is in line with the general assessment framework of the CMP for landfilling:

- Landfill is the most low-quality mode of waste management and should be avoided.

- Waste that cannot be treated in a higher quality must be landfilled in landfills with adequate facilities.
- Landfilling waste outside landfills is always undesirable and should not be allowed.

Before introducing waste onto or into the soil, landfilling or recovery must always be assessed first. The assessment framework for this can be found in the [Landfilling in a circular economy section]. Municipalities and provinces should then assess permits, exemptions and decentralised rules on the landfilling or recovery of waste against the assessment frameworks for high-quality processing of the relevant waste(s) in the chain and waste plans under [materials]. If there is no assessment framework for the specific waste, then the waste hierarchy provided for in the [chapter on guidance tools] of the CMP should be assessed.

Are the decentralised rules not in line with the review frameworks for high-quality processing or the waste hierarchy? In that case, the Municipality will follow the derogation procedure and informs the Ministry of Infrastructure and Water Management of the intention to deviate. This is how the municipality monitors the legal obligation to provide data (Article 10.14(4) WM). This is described in the [Derogations section]. In the event of an emergency, the procedure in the [Disaster chapter] must be followed.

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

Throughout the CMP, the topics under this chapter will be brought to the attention of policy officers on waste and on the circular economy of municipalities and provinces. In addition, we identify possible other decentralised rules relevant to the transition to a circular economy and adapt the CMP where necessary. This will be done in consultation with municipalities, water boards and provinces.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

6. Resources and more information

Household waste

For further details on the policy, legislation and assessment framework for household waste, please consult the [Chapter on separate collection of household waste]. TheVANGhousehold wasteprogramme helps municipalities to separate waste properly and prevent the incineration of valuable raw materials. On the programme website, municipalities can find information on how to encourage waste prevention and waste separation. For example, a tool such as the Menu Waste Preventionprovides information on how municipalities can reduce unaddressed printed advertising material and waste from nappies and incontinence materials.

In addition, the Circular Craft Centreproject provides municipalities with guidance on encouraging repair and reuse to prevent waste. Circular Craft Centre is a site or network in which the parties work together to reduce waste streams and achieve high-quality product and material reuse. This combines the functionalities of a waste collection site, thrift store and repair shop. More information on the legislation is available in the [Repair and reuse chapter].

Litter

To reduce litter, you can find more information on the legislation and the division of tasks and competences in the Netherlands Waste Prevention Programme. On behalf of the Ministry of Infrastructure and Water Management, the Directorate-General for Public Works and Water Management strengthens cooperation between site managers and stakeholders. Rijkswaterstaat also carries out research and shares knowledge with other public authorities. More information can be found on the website aboutlitter and microplastics.

High-quality processing

The minimum standards for the treatment of waste specified are included in the chain and waste plans of the different waste types under [materials]. Often, the [Bio-waste plan] and [Green waste waste plan] are relevant to questions such as:
garbage disposal units, outdoor incineration, and the landfilling or transfer of litter. For incineration, the [Wood chain plan] and the [Packaging waste plan] are also usually relevant. Explanations of the high-quality processing legislation and the CMP's role therein are provided in the [High-quality processing chapters].

Small-scale bio-waste processing

For bio-waste, there is an increasing number of initiatives for small-scale processing, such as composting or digestion machines. This is an environmentally harmful activity that is subject to permit requirements under the Environmental activities decree [Bal]. It is entirely governed by national rules. Competent authorities should take the assessment framework set out in the [Bio-waste plan] into account when granting the permit. In addition, depending on the specific processing method, other legal frameworks apply. This is covered by the [FAQ on small-scale bio-waste processing] for competent authorities.

Experiments

Do you want to know more about experimentation and experimentation facilities that offer circular initiatives? Read the Circular Economy Experimentation Guide. It explains the legislation and the possibilities for licensing.

Environment Act

All information on the Environment and Planning Act and regulations at the decentralised level in the Environment Plan, Environment Regulation and Water district Regulation can be found on the iplo.nlwebsite of the Information Point for the Living Environment.

Circular Materials Plan Design

Use of cost criterion

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

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Use of cost criterion

High-quality waste processing sometimes entails additional costs. The CMP sets a limit of EUR 265 per tonne. This section specifies what this amount is used for, what costs are and are not taken into account and how it should be applied.

1. Target audience

The minimum standard is the assessment framework for approving waste processing initiatives. In some cases, the processing costs play a role. It is therefore particularly important for **authorisation holders** to know how to use that part of the minimum standard.

In addition, what the CMP considers to be an acceptable level of costs may also play a role in the decision on whether or not to grant a dumping ban exemption. This topic is therefore also relevant for the **staff of the Environment Services granting exemptions from the landfill ban**.

Following on from this, this chapter is also relevant for **waste incineration or landfill operators and other waste processors**.

In specific cases, it is also relevant for **disposers and/or collectors of specific waste**. They may wonder in which cases the processing of this waste is above the threshold that it may be possible to switch to a cheaper but lower-quality processing.

2. Importance for the circular economy

High-quality waste processing may result in higher costs than low-quality waste processing. In order to protect disposers against unreasonably high costs, a lower quality form of processing, often incineration rather than recycling, is accepted in specific cases. In such situations, it is prudent to adopt measures at an earlier stage of the chain, such as design or collection, to ensure that the waste concerned is ultimately suitable for a more high quality form of processing, without leading to very high costs in specific cases.

3. Policy and legislation

3.1 What is the limit of EUR 265 per tonne used for

The limit of EUR 265 per tonne is used in the CMP for the following five purposes:

1. In specific cases, processing may be carried out at a lower value than recommended in accordance with the waste hierarchy and/or the minimum standard.

The waste and chain plans of this CMP may specify cases in which processing of lower quality than the minimum standard may be permitted where processing under the minimum standard would cost the disposer more than EUR 265 per tonne (see box for reasons).

Background on the use of the EUR 265 per tonne in the minimum standard

There may be two reasons for including the financial criterion in a minimum standard:

1. Sometimes we know that batches of waste are occasional and cannot be processed in the usual way. This usually concerns lots that, for an exceptional reason, such as specific contamination, are only suitable for recycling at high cost.

2. In other cases, the criterion is included because only a few processors work according to the minimum standard. This gives them an effective monopoly. The financial criterion protects disposers from the processor being charged too high a price because the waste must be delivered to them.

N.B.:

From the point of view of protecting the disposer against excessive costs, there is generally no reason to (continue to) work with this financial criterion for waste where there is extended producer responsibility.

In cases where the limit of EUR 265 per tonne is not explicitly mentioned in the chain or waste plan, lower value processing on a cost basis is not allowed.

The fact that, in specific cases, a high level of cost means that waste may be treated at a lower quality does not mean that this is mandatory. A more high-quality form of processing will also continue to be allowed at a higher cost.

For those wastes for which no minimum standard is specified in the CMP, the competent authority itself assesses the waste hierarchy (see [Section 3.4 'Distinction between higher and lower-quality processing'] in section 'guidance tools'). In this context, the competent authority may also use a price of EUR 265 per tonne as an indication of whether a higher quality form of processing is reasonable from an economic perspective.

2. The cost level of EUR 265 per tonne can also be a reason to opt out of source separation (see [chapter on separate collection of household waste]).

In this case, the difference is between the waste management costs of separation at the source or post-separation, and the costs of waste management of unseparated collection. This only concerns additional costs directly linked to the actual separate collection, such as additional collection resources, additional routes, additional transhipment, etc. This excludes any costs incurred in meeting the basic provision level (see again [chapter on separate collection of household waste]).

3. The price of EUR 265 per tonne may play a role in the imposition or non-imposition of a new dumping ban (see [Chapter on preparing and implementing dumping bans]).
4. The rate of EUR 265 per tonne may play a role in determining whether the Netherlands exercises national self-sufficiency in the cross-border transport of waste (see paragraphs [3.3.2 'Export and the limit value of EUR 265 per tonne'] and [4 'CMP assessment frameworks']).
5. The price of EUR 265 per tonne is one of the factors that play a role in setting or changing a minimum standard (see [section 'Minimum standard for processing']).

In addition to the above five examples, the limit of EUR 265 per tonne can also be applied in other situations, outside the CMP. For example, *disproportionate costs* may in certain cases be a reason to grant an exemption from the dumping ban under the Landfills and Waste Dumping Prohibitions Decree (Bssa). See also [Section 3.3.3 'Exemptions from the landfill ban based on EUR 265'].

3.2 Within the limit of EUR 265 per tonne falls

The limit of EUR 265 per tonne in the CMP is almost always limited to the processing fee that the disposer would have to pay when delivering to a processor's gate. More information on what falls or is not within this amount:

- It is the amount excluding VAT.
- Transport costs and any collection costs or other costs upstream are not included.
- The rate covers all activities that the processor is going to carry out (temporary storage, processing, disposal of residues, etc.).
- Any revenue from removable secondary raw materials produced during processing is considered to be included in this rate.

Only in the case of balancing separation at the source and post-separation, as in Goal 2 in the previous section, is the difference between the waste management costs of separation at the source and post-separation. These costs include not only processing costs but also collection costs. This includes costs for collection vehicles and storage facilities.

The box below shows how the limit of EUR 265 per tonne has been reached.

Origin of the limit of EUR 265 per tonne

From 2009, the criterion in LAP2 was '150% of the rate of landfill, including landfill tax'. This criterion was changed to EUR 175 per tonne in the second interim amendment to LAP2, and this instrument was also applied in a number of places in the LAP. The amount of EUR 175 per tonne was based on 150% of the regular landfill tax rate of EUR 89.71 plus an average landfill rate of EUR 30 per tonne applicable until 1 January 2010.

The transition to LAP3 was decided in consultation with the LAP Guidance Committee

- index this amount (2% per year from 2009 to 2017). This resulted in a new limit of EUR 205 per tonne.
- not to take into account transport costs, as these backwards to tonnes would in most cases lead to differences in the order of only a few euros.
- to maintain a single amount for all situations, rather than differentiating between waste or engineering, as this would become far too complex for uniform implementation and enforcement.

With the transition from LAP3 to CMP, the amount of EUR 205, indexed based on inflation from 2018 to 2024 (most years based on CBS figures and last year based on DNB forecast), leads to a limit of EUR 265 per tonne at the start of CMP.

3.3The practical use of the limit of EUR 265 per tonne

3.3.1 Processing according to the minimum standard is more expensive than EUR 265 per tonne

In a number of waste and chain plans, the limit of EUR 265 per tonne has been included to consider a form of waste management – mostly recycling – as too expensive in certain cases. The plan then indicates how this waste can be processed, in deviation from the usual way of processing. Most cases concern the possibility to burn if recycling is demonstrably more expensive than EUR 265 per tonne. Occasionally, landfilling can be back to back.

This concerns the costs to the waste provider as defined in [Section 3.2 'What does or does not fall within the limit of EUR 265 per tonne']. In addition, the limit applies only if the minimum standard explicitly allows for this possibility.

When offering a batch of waste to an alternative processor the waste provider must produce documents showing that, in this specific situation, the normally prescribed form of waste processing – usually incineration – would cost more than EUR 265 per tonne. The waste provider can meet this requirement by submitting statements from companies that are authorised, or authorised under general rules, to process the specific waste in the regular manner of processing (usually recycling). In this declaration, the company confirms that the prescribed form of processing costs the provider more than EUR 265 per tonne (calculated in accordance with the provisions of [Section 3.2 'What does or does not fall within the limit of EUR 265 per tonne']). If there are several companies in the Netherlands that can process this waste in accordance with the prescribed method, it is sufficient to provide documentary evidence from at least two of these companies, not belonging to the same group of companies.

The processor that will receive this waste will also check that this waste is indeed not eligible for reasonable costs for higher-quality processing. For the completion of this assessment, see [Section 4, 'CMP review frameworks'].

3.3.2 Export and the limit of EUR 265 per tonne

Where a lower quality form of processing is allowed on the basis of costs (typically incineration rather than recycling), this lower quality processing may also take place abroad. For the conditions under which the competent authority may agree, see paragraph [Section 4, 'CMP assessment frameworks'].

3.3.3 Landfill ban exemptions based on EUR 265.

Disproportionate costs may in certain cases be a reason for exempting from the dumping ban. Both the explanatory notes to Article 6 of the BSSA (Official Gazette, 2012, 466) and the explanatory notes to the Dumping Ban Declaration Regulation (2013, Art. 1(h) and (i) (Official Gazette, 2012, 21102)) state that the LAP states what is considered disproportionate costs. The CMP is the legal successor to the LAP, which is why the CMP implements the cost criterion contained in this regulation.

The starting point is that a derogation can only be granted on the basis of disproportionate costs where the minimum standard explicitly allows for it. In practice, (see explanatory note in the context), exemptions from the landfill ban on grounds of disproportionate costs can only be granted for:

- Plaster, Fluorescence powder and Stone wool.
- The occasional cases where waste [1] is subject to a dumping ban but the CMP does not have a minimum standard [2] and recycling and incineration are not economically an option [3].

Grounds on which exemptions from the landfill ban may be granted because alternative processing would be too costly

(1) The applicable minimum standard contains the cost criterion
In order to benefit from this cost criterion, all technically possible options (i.e. including incineration) must demonstrably be more expensive than this EUR 265 (excluding VAT, only processing costs). However, minimum standards setting out the financial criterion only state that if recycling is more expensive than the €265 – you can switch back to incineration from recycling. There is no possibility of returning to landfill on the basis of the financial criterion. Some exceptions are gypsum, fluorescence powder and stone wool. Only in these cases will an assessment against the minimum standard therefore lead to the possibility of a return to landfill on the basis of the financial criterion.

(2) The applicable minimum standard does not contain a cost criterion
In this case, the granting of an exemption on the basis of the financial criterion is not relevant. In some cases, however, the minimum standard does provide for the possibility of taking into account a different composition. Therefore, in general, we are first confronted with incineration as an alternative, and dumping would only take place if it is not technically possible. In all other cases (neither the financial nor the technical criterion is included in the minimum standard), the minimum standard does not provide for a reduction in the level of processing to a lower standard, and we assume in fact that processing of a lower quality than the minimum standard is neither necessary nor desirable. There is therefore no issue here unless we are in a type of disaster situation that the CMP has not been able to foresee by default.

(3) No minimum standard is applicable
In this case, the policy framework, including the waste hierarchy, is the assessment framework. Again, landfilling is only dealt with in any event when recycling and incineration are not an option. Here, the competent authority may use a price of EUR 265 per tonne as an indication of whether a higher quality form of processing is reasonable from an economic perspective. It should be noted, however, that situations where a waste is cumulatively subject to a dumping ban [1], where the CMP does not have a minimum standard [2] and where both recycling and incineration are not economically an option will be exceptional.

3.3.4 Higher costs than EUR 265, still acceptable

The amount of EUR 265 per tonne is a guide value for agreeing to another form of waste processing on the basis of costs. However, the CMP does not always keep this as an upper limit. As indicated above, the assessment against a cost level is only made when this is explicitly stated in the minimum standard for the waste concerned. Many of the minimum standards do not have a cost criterion. In these cases, the cost of processing will therefore rarely exceed EUR 265 per tonne and/or a higher level of costs is considered acceptable. The presence of specific contaminants or a high environmental gain from recycling certain materials may be a reason for this. In addition, a higher amount than EUR 265 can be used as a limit for specific waste or contaminants. This is then explicitly included in the minimum standard of the waste.

4. CMP assessment frameworks

Wastes for which there is no minimum standard in the CMP

- For waste for which no minimum standard is specified in the CMP, the competent authority conducts its own assessment against the waste hierarchy. Here, the competent authority may use a price of EUR 265 per tonne as an indication of whether a higher quality form of processing is reasonable from an economic perspective.

Processing according to the minimum standard is more expensive than EUR 265 per tonne

- It is only possible to waive the standard form of processing required on the basis of the cost aspect where this possibility is explicitly provided for in the minimum standard.
- These are costs for the provider as defined in [Section 3.2 'What does or does not fall within the limit of EUR 265 per tonne'].
- Competent authorities should ensure that the permit requirements and/or the corresponding AO/IC (Administrative Organisation and Internal Control) of the processor who is to receive the

waste contain balanced provisions to ensure that no unnecessary or unnecessary delays prevent the recovery of the waste to a more low-grade form of processing. In most cases, this concerns the permit and/or AO/IC of the WIP. Occasionally, this concerns the permit and/or AO/IC of the landfill. In any event, these provisions stipulate that:

- ◦ on waste can only be accepted if and for as long as processing under the regular minimum standard is more expensive than EUR 265 per tonne.
- ◦ the provider has proven this by submitting at least two declarations from companies that are authorised or permitted under general rules to process the specific waste according to the regular minimum standard. These statements should state that the regular form of processing (generally recycling) would cost the provider more than EUR 265 per tonne.
- ◦the maximum duration of certificates (this may vary from one waste to another).
- ◦The processor is required to keep these declarations for at least 2 years and to be able to produce them at the time of inspection.
- ◦ The processor is required to notify the competent authority at least five days in advance of any plans to process the waste concerned. It also indicates the type of waste, who the provider is, how it has been established that processing according to the standard minimum standard is not possible at a rate of up to EUR 265 per tonne and how much and how long one intends to accept the waste.

Export sales and the limit of EUR 265 per tonne

Transport abroad for a lower quality form of processing than the minimum standard normally requires may be authorised if (cumulative):

- This is explicitly indicated in Section III of the waste or chain plan.
- There are documents in the notification file showing that the prescribed form of waste management for the waste to be shipped costs more than EUR 265 per tonne.

  The notifiercan meet this requirement by submitting statements from companies that are licensed or authorised under general rules to process the specific waste under the regular treatment regime (usually recycling). In this declaration, the cost to the provider of the prescribed form of processing is higher than EUR 265 per tonne.
  (calculated in accordance with the provisions of [paragraph 3.2 'Within or outside the limit of EUR 265 per tonne']). If there are several companies in the Netherlands that can process this waste in accordance with the prescribed method, it is sufficient to provide documentary evidence from at least two of these companies, not belonging to the same group of companies.

- The documents in the file must show why it can be assumed that high-quality processing under the minimum standard will be more expensive than EUR 265 per tonne for the entire notification period (calculated in accordance with the provisions of [Section 3.2 'What does or does not fall within the limit of EUR 265 per tonne']). If this can only be justified for a shorter period, the period of notification will be adjusted accordingly.
- If the competent authority (Inspectie Leefomgeving en Transport (ILT)) considers that the declarations provided do not sufficiently demonstrate that the prescribed form of waste management is too expensive, it may require the notifier to submit an additional declaration from a processor appointed by the competent authority.

Initially, the above four conditions concern processing in the Netherlands. However, where the number of processors in the Netherlands is limited, a declaration from a foreign processor or requested by the competent authority (Inspectie voor Leefomgeving en Transport – ILT) may also be submitted. This is conditional on the foreign processor concerned being in principle authorised and able to process the relevant waste in accordance with the prescribed form of waste management.

Landfill ban exemptions based on the € 265.

The assessment framework for this topic can be found in the [Guidance on landfill ban exemption].

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

For this chapter, any adjustment of the CMP will consider whether the amount of EUR 265 per tonne should be indexed.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Keeping business and hazardous waste separate

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading 'Assessment frameworks'.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a 'content' or 'bookmarks' in the browser or the PDF reader's left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section 'Tools'.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can't read the text or images? Contact 088-7977102 or the helpdesk's contact form.

Status: Circular Materials Plan draft for public consultation

Sender: Ministry of Infrastructure and Water Management

Date: January 2025

Website: circulaire materials plan.nl

Keeping business and hazardous waste separate

Businesses, organisations and institutions generate various types of waste. This waste is collected and delivered for processing. Laws, regulations and policies on keeping waste separate before collection and delivery are in place to ensure proper treatment. This chapter of the CMP contains these laws, regulations and policies. This includes industrial waste, hazardous waste, and waste generated at construction and demolition sites. This section does not deal with keeping waste separate *after* collection or delivery.

1. Target audience

This chapter is written primarily for **companies, organisations and institutions** (hereinafter referred to as 'companies'). Various waste is generated in companies. For example, waste from offices and canteens, but also waste arising from specific business activities. Rules apply to the separation of waste generated by businesses or during construction and demolition activities. It is the responsibility of each company to know and comply with the rules.

This chapter is also written for the Authority. **Municipalities and provinces** control the compliance with the laws by granting licences, monitoring and enforcing the rules. In the area of industrial waste and hazardous waste generated by companies, the municipality is the competent authority for most companies.

Finally, this chapter is relevant for **waste collectors and processors**. They must provide services that comply with the law and advise their clients.

2. Importance for the circular economy

Separating and keeping waste separate is important for a circular economy. Separating waste first increases the security of its collection and processing. Separating and keeping waste separate also helps to close the loop by allowing more waste to be recycled and less waste to be incinerated or landfilled. The quality of the separated waste is important for the extent to which waste can be recycled. It is therefore important that different types of waste are kept separate from the time they are generated until their final treatment.

3. Policy and legislation

This section describes the legal frameworks and policies for keeping company waste, hazardous waste and waste generated at construction and demolition sites separate. This section starts with the general policy on separation at the source and post-separation. This is followed by the interpretation of different legal concepts. The relationship between mixing and separation is then described. In all cases, this concerns the rules that apply in a situation where 'collection or delivery' has not yet taken place. This difference between collection and delivery is important to be clear. For this reason, this section describes the point in time when collection or delivery takes place. Further rules on keeping them separate are then discussed.

3.1 Source and post-separation

Separation at the source is the starting point and the best for most waste substances. For some waste types, post-separation may be an alternative.

In the case of separation at the source, the waste is kept separate and collected separately at the site where it is generated (at the disposer). Separation at the source generally produces clean and more recyclable waste. Most waste should be segregated at the source in order to maintain the options for preparing for re-use and recycling. Separation at the source is also the default for waste to be kept separate for security reasons, such as electrical/electronic devices with batteries.

In the case of post-separation, the waste is mixed with other waste at the site where it arose (at the disposer site) and collected as a mixture. It is not until after collection that it is separated back into mono-flows. We also refer to post-separation when using drop-off facilities for a combination of wastes where the waste is separated afterwards. Think of the PMD container, where plastic, metal and drink containers are separated afterwards. In practice, this is sometimes referred to as sorting, but it is also referred to as post-separation. Post-separation is desirable for little waste because most waste will be contaminated when it is mixed with other waste. For example, textiles can no longer be recycled if they have become wet or dirty through mixing with VGF/GFE waste. For example, plastic can be post-separated.

3.2 Interpretation of terms

For a good understanding of the following paragraphs of this chapter, the interpretation of different concepts is important. Key terms are defined in the CMP, in line with the definitions in the Living Environment Activities Decree (Bal) and the European Waste Framework Directive (WFD), as follows:

- Company waste: waste, excluding hazardous waste and household waste not yet collected or delivered
- Hazardous waste: waste that exhibits one or more of the hazardous properties listed in Annex III to the Waste Framework Directive. The waste is specified in the European Waste List. It contains definitions and waste codes for a wide range of waste types. Wastes marked with an asterisk (*) behind the waste code in the list are to be considered as hazardous waste. Waste separation before collection or delivery is based on the waste categories set out in Annex II to the Bal.
- Waste category: [AnnexII of the Environmental Activities Decree] contains a list of more than 100 waste categories. It is indicated for each category whether the waste is hazardous (HW) or non-hazardous (NHW). If a category has both a dangerous and a non-dangerous variant, an A or B number has been added to the list.
- Construction and demolition waste: waste generated by construction and demolition activities. This includes waste from the construction, renovation and demolition of buildings and other constructions, including civil engineering works. Construction and demolition sites do not include roads and sports fields.

3.3 The relationship between waste mixing and separation

Although this chapter deals with ‘keeping waste separate’, the relation with ‘mixing’ (the opposite) is briefly mentioned. This is important because the Bal assumes that ‘mixing’ can be an environmentally harmful activity that is subject to rules and sometimes requires a permit. Mixing is a broad concept. Even if waste does not have to be kept separate by law, it can still constitute mixing. The rules and procedures for mixing are described in the [Waste Mixing Chapter]. If a business mixes waste that must be kept separate in accordance with this chapter [Section 4, ‘CMP assessment frameworks’], this constitutes an environmentally harmful activity that requires a permit.

3.4 Before collection or delivery

This section only deals with the separation of waste prior to collection or delivery. Based on the Bal, the CMP sets rules for keeping waste separate before collection or release (Article 3.39(1)(e) Bal).

Before the waste generated by companies is handed over to a waste collector or processor, this is known as ‘prior to delivery or collection’. Once the waste is collected by the collector, it constitutes ‘waste management’. Both situations are subject to different rules in the Bal. Paragraph 3.2.13 of the Bal applies to the processing of waste generated by a company ‘prior to delivery or collection’. These rules only apply if the business where the waste is generated does not carry out any activities with the waste other than mixing, bulking, storage, separation, repackaging or compaction.

It is not always self-evident when it comes to 'prior to delivery or collection' and when it comes to 'waste management'. The following are some clarifying examples:

- Waste generated in the canteen or office of the collector or processor concerns waste 'prior to collection or delivery'. Such waste must still be collected or delivered.
- 'Prior to collection or delivery' applies when work is carried out on site with another authority and waste resulting from the work is taken to your own site. An example is a landscaper or maintenance worker who takes waste resulting from their work on site to their own site. Paragraph 3.2.13 of the Bal applies to this situation. If a landscape gardener or maintainer also takes waste that arose during work activities other than that generated by another person, this is referred to as 'waste management'. In that case, paragraph 3.5.11 of the Bal applies.

The start of 'collection' and 'delivery' of the waste will be set out in the [Waste Authorisation Guidance Document]. This guidance contains explanations and examples that further explain the concepts of 'collection' and 'delivery' as contained in the Environmental Management Act.

3.5Hazardous waste

A company must always keep hazardous waste separate from other (hazardous) waste and from non-waste. Indeed, the Environmental activities decree [Bal] states that the mixing of hazardous waste is an environmentally harmful activity (Articles 3.39 and 3.185 Bal). A company can only deviate from this if a mixing permit is granted. The starting point for this provision in the Bal is the waste categories. However, the Bal contains a number of specific provisions on 'keeping away' from hazardous waste for disposers:

- Hazardous waste belonging to one waste category may be combined before collection or delivery. Exceptions to this are waste belonging to categories 11 (process-dependent industrial waste) and 110 (waste that may be landfilled). This must be kept separate for each waste type (Article 3.39(1) g of the Bal). Does a disposer want to combine different hazardous waste within these categories? In that case, 'mixing' is involved and a permit is required, see [Waste mixing chapter].
- Categories of hazardous waste must be kept separate from other categories of (hazardous) waste or from non-waste (Article 3.39(1)(d) and (f)). The exception is hazardous waste classified as a variant A of a certain number, and a variant B with the same number also exists. Hazardous waste of an A-category may be combined with the same waste of the corresponding B-category, because the Bal regards these two categories as a single waste category prior to collection or delivery (footnote to Annex II Bal).

For example, fire extinguishers larger than 1 kg and pressure tanks filled with gases may be dangerous and not dangerous depending on the contents (category 6a and b of Annex II Bal). Halon extinguishers are an example of fire extinguishers that are hazardous waste. Powder extinguishers are unlikely to be hazardous waste. All fire extinguishers and pressurised containers in this example, hazardous and non-hazardous, must always be kept separate from other (categories of) waste, but may be combined without a permit prior to their delivery and collection.

3.6Corporate waste

The Bal indicates that the mixing of industrial waste is an environmentally harmful activity if the CMP requires keeping it separate (Article 3.39 Bal). Therefore, companies must comply with the assessment framework set out in this chapter in [paragraph 4]. This states which company waste companies must keep separate prior collection or delivery. If a company does not do so, it is 'mixing' and mixing may require a permit.

As in the previous section, the waste categories are the starting point.
Waste belonging to a single waste category may, in principle, be combined by a disposer. This applies even if the blending/mixing of different types of waste is involved (e.g. a fire extinguisher and a gas bottle). As with the separation of hazardous waste, the legislation for corporate waste has a number of specific provisions:

- Business waste belonging to categories 11 (process-dependent industrial waste) and 110 (waste that can be landfilled) must be kept separate by waste, because mixing is an environmentally harmful activity (Article 3.39(1)(f) Bal). Does a disposer want to combine different company waste within these categories? In that case, 'mixing' is involved and a permit may be required, see [Waste mixing chapter].

- Business waste categories must be kept separate from waste (hazardous) and non-waste. One exception is business waste that has been classified as a Bvariant and also has an A variant. B-category business waste may be combined with the same A-category waste, as the Bal regards these two categories as one waste category (footnote to Annex II Bal).

If a business mixes waste that must be kept separate in accordance with this [Section 4, 'CMP assessment frameworks'] of this chapter, it is an environmentally harmful activity that requires a permit. Where mixing takes place and where mixing requires a permit, this is described in [Waste mixing chapter].

3.7Construction and demolition waste

Waste is generated at construction and demolition sites. The law distinguishes between waste from construction and demolition sites in construction sites and waste from other construction and demolition activities. For construction works, the Bal is not applicable, but rather the Environmental structures decree (Bbl). This is set out in Article 3.39(2)(a) of the Bal. The Bbl covers activities on or in the immediate vicinity of the construction and demolition site where the waste is produced (Bulletin of Acts and Decrees). 2018-293, § 7.1.5 Separating construction and demolition waste (Bbl). The Environment Act defines what constitutes a construction work and what are construction and demolition activities. For clarification, road and sports fields are not included in structures, which are not subject to the rules of the Bbl, but to the rules of the Bal. Underground storage tanks are edifices, but the rules for them are set out in the Bal since the Environment and Planning Act entered into force.

The Bbl defines the waste that must be kept separate *at* the construction and demolition site. Once construction and demolition waste is delivered and collected (i.e. leaving the construction and demolition site), the rules in the Bal also apply. The Bbl does not deal with combining waste with other waste or with non-waste. The rules of the Bal apply.

The sections below provide further details on the rules in the BBL on keeping waste that is released during construction and demolition separate. And the possibilities to deviate from this with a tailor-made provision.

3.7.1 Keeping waste separate at construction and demolition sites

The way construction and demolition works are carried out has a major impact on the composition of the waste and therefore on the possibilities for recycling and reuse of construction materials or materials. The mixing of waste can lead to contamination of clean material streams. Consider contamination by fragmentation and mixing with gypsum, significant reduction in recycling potential due to broken glass, etc. Therefore, construction and demolition works must be carried out in such a way that hazardous waste and other construction and demolition waste arising during execution is properly separated (Article 7.24 Bbl).

Waste separation rules at construction and demolition site

Article 7.25 Bbl Rules for separating *hazardous* construction and demolition waste:

1. Regardless of the amount, hazardous construction and demolition waste is at least separated into the following fractions:
    a. waste classified as hazardous, referred to in Chapter 17 of the waste list of the European Waste List Regulation, in so far as these substances are not included in points (b) to (d) of this paragraph;
    b. roofing containing tar, with or without roof boarding;
    c. tar-containing asphalt; and
    d. discharge lamps.
2. A hazardous substance is not mixed or separated.
3. The fractions are kept and removed separately at the construction and demolition sites.
4. By way of derogation from paragraph 3, the fractions may be separated at another location where separation at the construction and demolition site is not reasonably possible.

Article 7.26 Bbl Rules for separating *other* construction and demolition waste:

1. Other construction and demolition waste is separated into at least the following fractions:
    a. bituminous roofing, with or without roof boarding;
    b. asphalt not containing tar;
    c. flat glass, with or without frame;
    d. gypsum blocks and plasterboard materials;
    e. roof gravel; and
    f. luminaires.
2. The fractions are kept and removed separately at the construction or demolition site.
3. Paragraphs 1 and 2 shall not apply if the quantity of waste of that fraction is less than 1 m^3.
4. By way of derogation from paragraph 2, the fractions may be separated at another location where separation at the construction and demolition site is not reasonably possible.

3.7.2 Keeping custom instructions separate at the construction and demolition site

Sections 7.25 (4) and 7.26 (4) of the Bbl allow the competent authority to derogate from the rules. To this end, the competent authority issues a custom instruction. Situations in which a tailor-made requirement may be issued are:

- when granting an environmental permit for a construction activity;
- when receiving notification or information for a construction or demolition activity.

The tailor-made requirement applies only to the addressee. This is the person who carries out the activity.

3.8Extended producer responsibility

Producers are also sometimes responsible for the waste management of products. This is called the Extended Producer Responsibility (EPR). Producers, including importers, are responsible for waste management of tyres, cars, batteries and accumulators, electrical and electronic equipment, textiles, packaging, disposable plastics, flat glass, consumer mattresses, and paper and cardboard. EPR is also created for nappies and fishing gear. The producer has to pay for and, in many cases, organise the management of waste. Often this is done collectively by a producer organisation.

The rules for EPR may also cover the separate collection of industrial waste and hazardous waste. In this case, the producer should also provide collection facilities that disposers may use free of charge. Check with the producer organisation concerned about the possibilities. For more information and the most up-to-date overview of all RPV flows, see website on extendedproducer responsibility.

4. CMP assessment frameworks

As indicated in [section 3.4], businesses must not yet keep their industrial waste collected or delivered separately from other commercial waste categories if required by the CMP. This section indicates when this is the case. This section does not deal with hazardous waste, which must always be kept separate (Article 3.39 paragraph 1(d) Bal) unless the mixing permit is granted. More information on hazardous waste can be found in [section 3.5]. This section also does not deal with waste generated at construction and demolition sites. More information can be found in [Section 3.7].

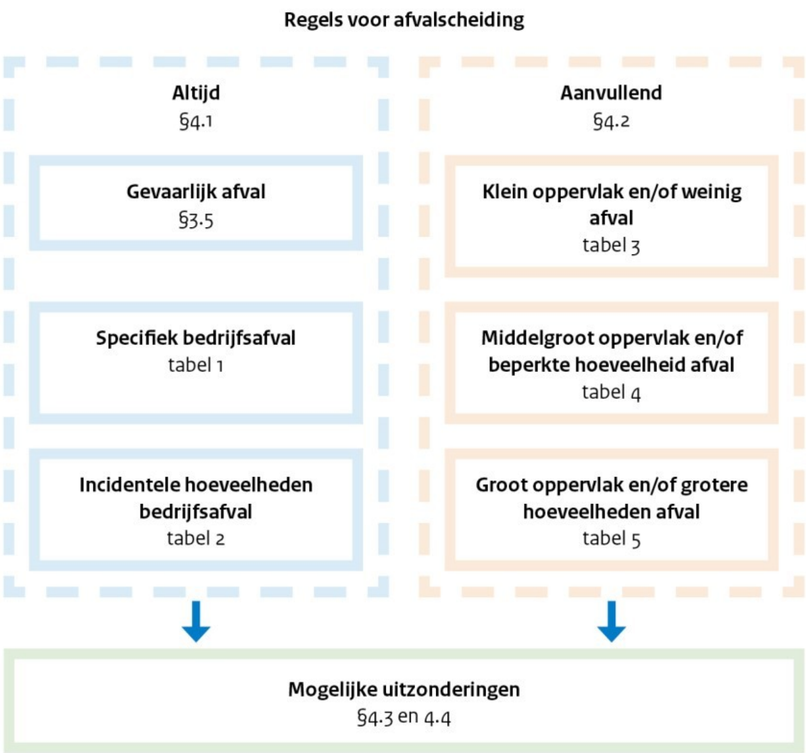
The rules on keeping company waste separate are divided into two types:

1. Corporate waste that must always be kept separate [section 4.1].
2. Corporate waste which, in addition, must be kept separate depending on the amount of waste and the area of the business [Section 4.2].

Exceptions to the rules apply to public and semi-public spaces. These exceptions are described in [Section 4.3]. For a number of waste types, the obligation to separate waste may be met by post-separation instead of source separation. The waste types to which this applies are listed in [Section 4.4]. An explanation of the rules for keeping corporate waste separate is described for each waste type in [Section 4.5]. Figure 1 provides an overview of the waste separation rules for corporate waste.

If a company or organisation wishes to deviate from the assessment framework set out in this Chapter and still mix the waste, a permit is required. More information on the relationship between mixing and separation can be found in [section 3.3] of this chapter and in the [waste mixing chapter].

Figure 1: Overview of waste separation rules for corporate waste



4.1 Corporate waste that must always be kept separate

Companies must keep some company waste separate at all times. This section distinguishes two categories:

1. Waste that must always be kept separate when companies have it, *regardless of how much or how often it is generated* (Table 1).

2. Waste that businesses must always keep separate when they have *occasional specific volumes* of that waste (Table 2).

All waste that must always be kept separate, irrespective of the volume of waste and the area of the business, is described in Table 1. The amount or frequency of release of these wastes from their activities is irrelevant. Waste that businesses are required to keep separate when they have occasional specific volumes of that waste is described in Table 2.

For Tables 1 and 2, there are exceptions for public and semi-public spaces and for post-separation. For more information, see [Section 4.3] and [Section 4.4].

Tabel 1: Commercial waste that always requires separation, regardless of the amount or frequency of its release

Corporate waste	Waste category under Annex II Bal
Waste water streams and basins	Multiple categories
Waste containing asbestos	Multiple categories
Asphalt	Multiple categories
End-of-life vehicles	93
Tyres	3
Batteries and accumulators	82
Fire extinguishers > 1 kg and pressurisers	6
Aerated concrete	52
Animal by-products	36
Electrical and electronic equipment	79
Decontaminated HCW	38
Gypsum	51
Green waste from agriculture, forests and nature and public green space	12
Soil and dredged material	Multiple categories
Synthetic grass	23
Mercury-containing waste	Multiple categories
Agricultural plastic	Part of 22
Metals	Multiple categories
Undeveloped photo paper	27
Underground storage tanks	5
Organic agricultural waste	13
Paper or plastic insulated cables	7
Process-dependent industrial waste	10 and 11
Residual substances from drinking water preparation and power plants	Multiple categories
Sewer, cesspit, milled sludge (RKG sludge)	15
Food, Beverages and Tobacco Industries Sludge	16
Stony material	Multiple categories
Mineral wool in horticulture	32
Blasting grit that can be cleaned	81
Tanks for car gas	4
Sweepings from public spaces	14

Acid tar and other waste containing sulphur	109

Table 1 summarises the categories listed in Annex II to the Bal. Sometimes there are several categories for a waste, for example metals. See Annex II to the Bal for the actual waste categories.

Tabel 2: Waste that is required to be separated if it is generated incidentally

Corporate waste	When to keep them separate	In waste category Annex II Bal
A and B wood and wood packaging	At 3 m^3 or more	19 and 20
Bio-waste and similar biodegradable business waste (VGF/GFE waste, swill)	At 240 litres or more	13
Glass packaging	At 240 litres or more	34
Green waste	At 3 m^3 or more	12
EPS (polystyrene foam) packaging	At 1000 litres or more	31
Plastic film	At 400 litres or more	22
Mattresses	In 10 or more units	29
Paper and cardboard	At 1000 litres or more	26
Textiles that are business clothing, linen and/or unsellable textiles	At 1 m^3 or more	18

Waste is not generated structurally in the business or organisation, but is occasional only in certain events. For example, new purchases of (business) clothing, inventory replacement or modification of the interior. If more than one amount of waste is generated in these occasional cases, keeping them separate is mandatory.

For Tables 1 and 2, there are exceptions for public and semi-public spaces and for post-separation. For more information, see [Section 4.3] and [Section 4.4].

4.2Commercial waste to be kept separate depending on quantity and area of the holding

In addition to the waste that must always be kept separate, there is a small number of waste types that require separation, but not in all situations. This refers to the situation where a company has very little waste and/or space. Tables 3 to 5 describe which waste should be separated in which situations. Three situations are distinguished.

In order to determine which of the above situations applies to a business and which waste it must keep separate, it is important to determine:

• What is the total amount of waste generated within the business;
• How much the total area of that business is; and • What waste is released within the business.

Tabel 3: Total waste is less than 240L per week and/or total surface area is less than $40m^2$ (Situation 1)

Company waste to be kept separate by these companies in addition to Tables 1 and 2	When to keep them separate	Annex II Bal category
No additional waste that needs to be separated.	Not applicable	Not applicable

Table 4: Total waste is between 140L and 660L per week and/or surface area is between 40 and $100m^2$ (Situation 2)

In addition to Tables 1 and 2, at least one of the four commercial waste substances listed below must be kept separate by these companies if they are released from the company.	When to keep separate (*)	Annex II Bal category
Bio-waste in professional kitchens and in trade/sales (incl. auctions)	Once it is created on a daily basis	13
Glass packaging	Once it is created on a daily basis	34
Plastic films	Once a week is formed	22
Paper and cardboard	Once it is created on a daily basis	26

(*) Daily refers to the waste usually occurring every business day. It means that the waste is generated in daily operations/business operations. Weekly means that the waste is generated at least once a week. Thus, this is waste that is released frequently or structurally in the company or organisation.

Tabel 5: Total waste is more than 660 litres per week and/or the surface area is more than $100m^2$ (Situation 3)

Company waste that must be kept separate by these companies in addition to Tables 1 and 2 when this waste is released from the company	When to keep separate (*)	Annex II Bal category
A and B wood and wood packaging	If it is 3 m^3 or more per month	19 and 20
Bio-waste from professional kitchen and from trade/sales (incl. auctions)	Once it is created on a daily basis	13
Glass packaging	Once it is created on a daily basis	34
Green waste	Once a week is formed	12
EPS (polystyrene foam) packaging	Once a week is formed	31

Plastic films	Once a week is formed	22
Napkins of day-care centres or care institutions	If it is generated on a daily basis and there is a possibility to offer it separately	30
Paper and cardboard	Once a week is formed	26
Textiles, which are corporate clothing, linen and unsellable textiles	Once a week is formed	18

(*) Daily refers to the waste usually occurring every business day. It means that the waste is generated in daily operations/business operations. Weekly or monthly means that the waste is generated at least once a week or at least once a month. Thus, this is waste that is released frequently or structurally in the company or organisation.

Further details on 'total amount of waste' and 'total area' are provided in [section 4.2.1] and [section 4.2.2].

4.2.1Rules for a small total amount of waste

For smaller quantities of waste, the process of separate collection is becoming less cost-effective and efficient. It will also be practically more difficult to arrange, as there are no smaller containers. To take this into account, waste is not required to be kept separate if the total amount of waste per week is small from the business or organisation.

The total amount of waste is determined on the basis of the total volume of the waste container(s) removed per week. If several containers (including different waste materials) are disposed of, they are added together. If emptied more or less frequently than once a week, the volume of the waste container is converted into the quantity per week. Sites that include several companies (e.g. company collectors' premises, a venue or event with several catering concepts or a station with shops and hospitality) and where collection containers are located in a central location are considered as one single location.

The following rules apply on the basis of total waste:

- Total waste is *less than or equal to 240 litres of waste per week*: no separate delivery is required (Table 3).
- Total waste is *between 240 and 660 litres of total waste per week*: keeping one of the following waste types separate is mandatory: paper and cardboard, bio-waste in professional kitchen, in trade/sales, glass containers or plastic film (Table 4). However, if the company has a small area, this exception may apply. Please read [Section 4.2.2].
- Total waste is *more than 660 litres per week*: keeping waste separate is mandatory for all applicable situations listed in Table 5. However, if the company has a small area, this exception may apply. Please read [Section 4.2.2].

Businesses in the inner-city area, in particular, sometimes have very little space available. The total floor area and own outdoor areas are limited. As a result, it is sometimes not reasonable to have to keep the waste separate in multiple containers and bags. In order to take account of businesses with a very small total area, it is not necessary to keep them separate in these situations.

The total area includes both the building's space and its own outdoor space. If the municipality has laid down in a regulation that the placing of waste containers in (part of) their own outdoor space is prohibited, this area does not have to be included in the total area. It is expected that a way of keeping waste separate is found within the business process with some creativity. Sites that include several companies (e.g. company collectors' premises, a venue or event with several catering concepts or a station with shops and hospitality) and where collection containers are located in a central location are considered as one single location.

The following rules apply on the basis of the total area:

- *Less than 40 m2*total area: it is desirable, but not mandatory, to keep separate and deliver it separately (Table 3).

- *From 40 m2 to 100 m2* total area: keeping one of the following waste types separate is mandatory: paper and cardboard, bio-waste in professional kitchens, commercial/sales, glass packaging or plastic film (Table 4). However, if the company has a low level of waste, this exception may apply. Please read [Section 4.2.1].
- *Starting from 100 m2* total area, all applicable situations listed in Table 5 must be kept separate. However, if the company has a low level of waste, this exception may apply. Please read [Section 4.2.1].

4.3Exceptions for public and semi-public spaces

Keeping waste separate in the public space can be challenging. For public and semi-public spaces, the cases in which waste separation is required and when not are determined separately.

Where there is a high audience, it is often more difficult to keep waste separate. The waste is more easily contaminated by the fact that many different people are involved, in particular consumer waste such as food waste packaging. However, separation of waste with the right organisation and communication is possible in situations where staff mainly produce and dispose of waste.

Therefore, the following rules on keeping waste separate apply to public and semi-public areas:

- *Mandatory* in places where staff primarily generate the waste. These are the non-public parts, such as employees' workplaces, behind the counter in shops, the hotel, restaurant and catering, and in the production area or kitchen, including the waste from table-top shops. This assessment framework applies.
- *Not mandatory* in public and semi-public spaces where waste is predominantly disposed of by private individuals (such as visitors, clients, pupils, members). These are the public outdoor and indoor spaces of, for example, shopping centres, stations, amusement parks, educational institutions, sports facilities or fast-food restaurants. It makes no difference whether individuals are paid for access. In these cases, waste separation is desired but not required.

4.4Combined collection and post-separation exemptions

Some commercial waste substances that must be kept separate may be collected in a good combination with other waste substances or may be collected after separation from residual waste. Source separation is not required for the following waste types if post-separation is performed *in accordance with the conditions specified below*:

- Small waste electrical/electronic equipment, lamps and/or batteries that are collected in a small hazardous waste environmental box that allows post-separation from a combined stream. These wastes may not be collected as part of the residual waste but may be collected as combined waste.
- Metal, plastic and wood waste may be collected post-separated or combined from the residual waste.

Conditions for post-separation (cumulative):

1. The waste can still be processed according to the minimum standard; and
2. After combination, the different waste types can be recovered in a quantity and quality at least comparable to that in which the waste types in question would have been kept separate at source; and
3. Post-separation is certain, for example because it is stipulated in the contract with the waste collector.

For bio-waste, green waste, paper and cardboard, glass, EPS, textiles and mattresses, subsequent separation from residual waste or collection in combined streams is not an alternative to source separation. However, collecting these waste substances together in a vehicle is allowed if the waste is not mixed together. For example, because one or both wastes are located in different compartments, a well-sealed bag or other collection container.

4.5Clarification for rules to be kept separate by company waste

In this section, the company waste types are detailed in [Section 4.2]. No new rules are described here compared to the previous paragraphs.

A/B wood and wood packaging

The A wood (unpainted and untreated) and B wood (painted, varnished or glued) fall under the same waste category and may be collected together. Wood packaging such as pallets and crates are a separate waste category. In practice, however, separate collection for waste wood (Class A wood and Class B wood) and wood packaging does not apply. Therefore, it is not required to keep A and B wood separate from the wooden packaging. Thus, mixing A and B wood and wood packaging is not subject to permit requirements for the company or organisation. Limited collection of small quantities of wood waste is available in the Netherlands. Collection is generally carried out with containers starting from 3 m^3. The table is attached hereto.

There is also a category of C wood, which is not covered here. For more information on wood, see the CMP Wood chain plan.

Bio-waste and comparable biodegradable business waste

Many sectors release biodegradable waste. This refers to bio-waste other than green waste.

The food and drink of staff and/or clients always creates a small amount of bio-waste in each business or organisation. However, the volumes involved are small for many companies. Therefore, it is not always required to keep it separate. This is the case, however, if bio-waste is related to the activities of the company or organisation. It is therefore specified that food or plant residues (trimmings, unpackaged expired/unsellable products) must be kept separate when they arise from agriculture (production waste, plant waste, fruit and vegetable waste), professional kitchens (kitchen waste, also called swill) and from the trade in and sale (including auctions) of food or plants. Professional kitchens refer to kitchens where food is prepared for staff or third parties.

Swill consists of trimmings and prepared and unprepared food waste and is collected in 120-litre containers, for example. Unpackaged or unpacked products that can no longer be sold can be added to the swill or collected separately (typically in 240 litres of containers). Unsold packaged organic content products must not be thrown at the trench waste (swill). Packaged food is preferable to unpacked so that the organic content is recycled as bio-waste. Processing swill by digestion and composting is cheaper than processing residual waste. However, overall collection and processing are more expensive compared to residual waste costs.

If this waste stream has to be kept separate in the company or organisation, bio-waste generated in other areas of the company or organisation, such as coffee machines, is also required to be kept separate (except for the exception for public and semi-public spaces).

For the question of what constitutes VGF waste from households (vegetable, fruit and (fine) garden waste) and similar organic business waste, please refer to the ‘yes’ side of the ‘organic waste list’ in the [Waste separation list] under ‘instruments’.

Glass packaging

It is mandatory to keep glass packaging waste separate if glass waste arises every working day in the company or organisation.

Green waste

If green waste originates from agriculture, forests, nature or public green space, it must always be kept separate. This applies even if the company or organisation has this waste on a weekly basis, as with landscapers. For businesses that occasionally generate green waste, for example from the company’s garden, and dispose of it themselves, containers starting from 3 m^3 are generally available.

Plastics: agricultural plastic, EPS (polystyrene foam) packaging and plastic films

For three types of plastic waste, the tables indicate that they are required to be kept separate. Agricultural plastic, EPS packaging and plastic films are common waste for which collection and treatment operations are available throughout the Netherlands.

Agriculture releases different types of agricultural plastic in large quantities and this is directly linked to the business or organisation’s activities. It is therefore always required to keep it separate. Plastic film mostly consists of transport packaging film, such as shrink and stretch films and covers for product delivery. 'EPS' packaging means large polystyrene packaging material (not polystyrene from construction). Both film and EPS are collected in special bags. They must be kept separate if they arise weekly or occasionally in larger volumes in the business or organisation.

Nappies and incontinence materials

For nappies and incontinence materials, a waste category is included in Annex II to the Bal. In addition to households, many nappies are mainly released in nurseries and healthcare facilities. Pending developments in separate processing of diapers, it is already required to keep them separate if they arise on a daily basis and a collection structure is available to enable them to be used.

Mattresses

The hospitality (hotels, holiday homes, B&Bs), care (hospitals, childcare) and public administration (prisons, prisons, etc.) sectors discard mattresses. Mattresses from companies are collected starting in quantities of 10 or 20 units. Depending on the collector, these costs are not significantly higher than for residual waste. For small quantities, a nationwide collection or drop-off structure is not yet available for businesses. Keeping them separate is desirable but is not yet required for small quantities. The mattress chain is working on producer responsibility. In future, therefore, it may be possible to require businesses to keep this waste separate. Mattresses are recycled and it is important to keep them clean and dry. Wet mattresses may also pose a fire hazard. The mattresses should therefore be stored dry before collection.

Paper and cardboard

This waste affects all businesses to a greater or lesser extent. With the rule that paper and cardboard must be separated if it is released weekly, this will also be mandatory for almost all businesses. Exceptions to this rule are limited to the minimum total volume, small spaces and public and semi-public spaces.

Paper cups, paper towels and drink cartons are not included in the tables because their collection and processing is still under development. It is desirable to keep them separate but is not (yet) required.

Process-dependent industrial waste

Process-dependent industrial waste is waste generated from the business processes, where a company or organisation must always ensure responsible processing of the waste. Process-dependent industrial waste may also be plastic or wood, for example, depending on the industrial process. This waste must be kept separate unless a mixing permit has been granted.

Textiles

Various types of textile waste are produced in companies. The most important ones are (business) clothing, linen and unsellable textiles. Unsellable textiles could be clothing, linens or home textiles, for example. These three types of textile waste must be kept separate if they arise weekly or if they arise occasionally at 1 m^3 or more. Textile waste includes footwear, such as unsellable shoes and discarded work shoes. Currently, it is not required to keep footwear separate.

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

Various initiatives are currently underway to improve the efficiency of corporate waste collection logistics. The aim of the policy is to make it easier and more affordable for economic operators to separate waste and to limit transport and emissions. This may prompt a strengthening of the policy on keeping waste separate during the revision of the CMP. In addition, there are developments in costs and revenues, sorting and recycling options, increased circularity of chains and extended producer responsibility (such as packaging, textiles, mattresses). This may also prompt changes to the waste separation policy for businesses in the CMP.

For a number of waste types, it is desirable to keep them separate, but it is not (yet) required:

- Paper towels are not included because their collection and processing is still under development.
- Plastic packaging and beverage cartons, like glass, are subject to extended producer responsibility. This allows businesses to benefit from free collection. Additional separation rules relating to plastic packaging and beverages could be considered at the next revision of the CMP.
- The adaptation of producer responsibility for (plastic) packaging and the deposit and single-use plastics (SUP) measures will lead to changes in the waste from (semi-)public areas. Plastic waste and packaging waste in public and semi-public areas will be re-examined in 2026 when the separation rules are evaluated. It is expected that more plastic packaging will be required to be kept separate.
- Extended producer responsibility for textiles has been in place since 1 July 2023. Currently, it is not required to keep footwear separate. Footwear will be added in the coming years. In future, therefore, businesses will be required to keep footwear separate.
- There is an extended producer responsibility for consumer mattresses. Developments may also affect mattresses for businesses. In future, therefore, it may be possible to require businesses to keep this waste separate.
- In the context of the National Circular Economy Programme, in consultation with the Ministry of the Interior and Kingdom Relations, it will be considered whether the list of construction and demolition waste fractions that must be separated at the site of release should be extended. Examples include cellular concrete, EPS, glass wool or rock wool. This could potentially lead to the amendment of the BBL and thus the obligations to keep it separate.

The Waste Framework Directive requires Member States to regularly review separate collection exemptions for certain waste types. Developments in separate collection, sorting and treatment of waste have an impact. Depending on these developments, the assessment framework in this chapter will be adapted.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

6. Resources and more information

Resources

For more information or useful resources, check out what your business should keep separate at:

- Waste guide for businesses: check   Ondernemersplein (kvk.nl)
- Waste separation in your company   Ondernemersplein (kvk.nl)
- Separating business waste - LAP3
- Home - VANG Non-household
- Home   Ministry of Infrastructure and Water Management (minderingue plastic.nl)

Mention of the source

For this part of the CMP, the following documents have been used:

- Green Events (2023). *Separating waste at events.*
- Rebel Group (2020). *Separate collection of business waste streams.*

Circular Materials Plan Design

Waste separation

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

Status: Circular Materials Plan draft for public consultation

Sender: Ministry of Infrastructure and Water Management

Date: January 2025

Website: circulaire materials plan.nl

Waste separation

Separating and separating waste is important for a circular economy. Waste collection and treatment is also safer through waste separation. This section of the CMP outlines the policies and legislation applicable to household and business waste.

Municipalities have a legal duty to regulate and document the separate collection of household waste in their environment plan or waste regulation. This concerns both home collection and drop-off facilities at collection points. In doing so, municipalities should take into account the assessment framework provided by the CMP.

In addition, there are rules for businesses on how to keep business waste and hazardous waste separate and for construction and demolition sites. The rules apply to those who produce the waste and before they deliver it for collection or treatment. Municipalities and provinces are the competent authorities for this. They take into account the assessment framework set out in the CMP when carrying out their licensing, monitoring and enforcement tasks.

Separate collection of household waste
Keeping business and hazardous waste separate

Separate collection of household waste

Household waste has been collected separately for many years. Municipalities have the legal task of organising separate collection. They include the rules for this in their waste regulations or environment plans. In doing so, they should take into account the assessment framework of this chapter in the CMP.

1. Target audience

This section has been written for municipalities. The legal task for municipalities is to organise the separate collection of household waste. They are also expected to encourage households to keep waste separate. In this section, municipalities read which waste streams they are obliged to collect and how they may deviate from the rules.

This chapter also describes the rules that apply to municipal waste collection sites (hereinafter referred to as ‘waste collection sites’). A municipality may, in cooperation with other municipalities, either manage the collection point or instruct a company to manage it. This section has therefore also been written for owners of waste collection sites that are not the municipality. However, the municipality remains the ultimate responsibility for complying with the rules applicable to the collection point.

Decentralised rules that municipalities are allowed or even required to set on, for example, litter and garbage disposal units are set out in the [Decentralised Rules Chapter].

2. Importance for the circular economy

Separating waste makes collection and processing safer. Waste materials such as asbestos, pressurisers and small chemical waste, if not collected separately, can create hazardous situations in collection and treatment operations. Separating and keeping waste separate is also important for a circular economy. It helps to close the materials cycle by allowing more waste to be recycled and less waste to be incinerated or landfilled. The ability to prepare the waste for reuse or to recycle depends on the quality of the separated waste streams. It is therefore important that different types of waste are kept separate from the time they are generated until their final treatment.

2.1Separation at the source and post-separation

There are two ways to separate waste: separation at the source and post-separation. Separation at the source is best for most streams. For some streams, post-separation can be an alternative.

Separation at the source involves separate collection and separate collection of waste at the site where it arose (at the disposer site). Another form of separation at the source is collection via drop-off facilities for mono-streams, such as paper or glass containers. Separation at the source generally provides clean and more recyclable streams. Most waste streams need to be source-segregated in order to maintain the options for preparing for re-use and recycling. Separation at the source is also the standard for waste to be separated for security purposes, such as electrical and electronic equipment.

Post-separation involves the mixed collection of waste at the site where it arose (at the site of the disposer) and its subsequent separation into mono-streams. Post-separation is also required when using drop-off facilities for a combination of streams where the streams are separated from each other afterwards. Think of the PMD container, where plastic, metal and drink containers are separated afterwards. In practice, this is sometimes referred to as ‘sorting’, but this is also known as ‘post-separation’. Post-separation is possible for few waste streams, as most waste streams become polluted when combined with other waste streams. For example, textiles can no longer be recycled if they have become wet or dirty due to a stream such as VGF/GFE waste. For example, for plastics, post-separation is possible.

What needs to be collected separately and when post-separation is allowed is stated in the law and further elaborated in this chapter.

2.2Yes/No lists

To facilitate the separation of waste by citizens, lists have been drawn up that tell what does and does not belong to the separated waste (otherwise yes/no lists). However/not lists exist for household bio-waste (VGF waste), textiles, paper and cardboard waste and small chemical waste (SCW). The purpose of the lists is to contribute to more and better waste separation. Properly separated waste is better recycled and is more of a quality recycled nature. The lists can be found in [Waste separation list].

3. Policy and legislation

This section describes all the relevant laws and regulations that apply to the separation of household waste. It addresses the obligations of municipalities for separate collection, which municipalities must collect separately, the rules in the recycling centre, how the municipal responsibility relates to producer responsibility and who monitors the municipalities’ compliance with the rules.

3.1What are municipalities’ obligations for separate collection?

Municipalities are required to ensure that household waste, with the exception of bulky household waste, is collected at or near each parcel within their territory at least once a week (Article 10.21(1) of the Environmental Management Act (EMA)). The municipality may collect and outsource the separate collection of household waste. The municipality can also fulfil the collection obligation by providing a sufficiently covering network of drop-off facilities (e.g. glass and textile bins) in the vicinity of each parcel of land in the municipality. It should be clear where citizens can dispose of all their waste. Citizens should also be able to easily dispose of their waste separately. Municipalities may therefore offer space to other parties who have the necessary environmental permit to collect household waste (if necessary).

In the Waste Ordinance or the environment plan, the municipality defines who will carry out, or how they will be determined, the separate collection (Article 10.24(1)(a) EMA). It may also lay down other rules for the collection section (Article 10.24(2) EMA). In addition, the municipality sets out in the Waste Ordinance or Environment Plan the rules that apply to separate collection by parties other than the collection service, such as schools and associations that collect paper, for example (Article 10.24(1)(b) EMA). The Waste Regulation also requires municipalities to allow producers subject to EPR to collect household waste. The Waste Ordinance or the environment plan also contains rules on drop-off facilities or collection sites (Article 10.24(1)(c) EMA). More information on what the municipality must set in a decentralised way can be found in [Chapter on decentralised rules].

In addition to collection (Article 10.22(1)(a) Wm), drop-off facilities must also be available for bulky household waste (Article 10.22(1)(b) Wm). These
drop-off facility is often referred to as the collection point. Municipalities may wish to have

A recycling centre cooperates and has one site or causes it to be operated for residents of the municipalities. The rules for the collection point are described in [Section 3.3].

3.2What do municipalities need to collect separately?

The Decree on separate collection of household waste (GIHA Decree) requires municipalities to ensure a separate collection system for a number of waste streams. The starting point for separate collection is low threshold (explanatory note on GIHA Decision).

Separate collection is required for paper, textiles, household hazardous waste and waste electrical and electronic equipment. No derogation is possible. The GIHA Decision also obliges municipalities to separately collect metal, plastic, glass and household bio-waste (VGF and GFE waste). Derogations are possible, however, subject to specific conditions. These conditions are based on the Waste Framework Directive (WFD) described in the WFD information framework below and elaborated in the [assessment framework] of this chapter.

Information framework – Waste Framework Directive (WFD)
The European Waste Framework Directive (WFD) requires Member States to set up a separate collection system for certain waste types (Article 10 WFD). In addition, the WFD provides a number of grounds for derogation from the separate collection requirement (Article 10(3) WFD). In short, these are:

a. Any other form of collection has no disadvantages in preparing the waste concerned for reuse, recycling or other recovery, and produces a similar quality of output.
b. Separate collection would have an overall negative impact on the environment. c.Separate collection is technically not feasible.
d. Separate collection would entail excessive economic costs.

Article 10 of the WFD has been implemented in the Decree on separate collection of household waste (GIHA Decision).

Separate collection systems may be set up for more than just the mandatory streams, for example nappies and incontinence materials. Table 1 provides an overview of the rules for separate collection of household waste.

Tabel 1: HHA Separate Collection Rules

Waste (from households)	Separate collection by/on behalf of the municipality
Bio-waste (VGF/GFE waste)	Mandatory, but exemptions possible if separate collection is not technically possible or would be excessive (Article 10(3)(c) and (d) WFD).
Metal* Plastics** Glass	Mandatory, but exemptions possible if they do not adversely affect the quality and quantity of recycling or reuse (Article 10(3)(a) WFD).
Paper and cardboard Textiles Hazardous waste*** Waste electrical and electronic equipment	Mandatory, no exceptions possible.

Other waste	Not mandatory, but allowed.

*Based on the explanatory memorandum to the GIHA Decision, this includes can packaging.
**Based on the explanatory note to Decision GIHA, this includes drinking suits.
***Hazardous waste includes waste that forms Small Chemical Waste (SCW), such as waste oil, batteries and accumulators, but also paints. For the full list of SCW, see [Waste separation list/not lists] under 'Tools'.

The municipality defines the streams for which it has a separate collection system and what is expected of residents in the waste regulation or environment plan (Article 10.24 WM).

In principle, municipalities must comply with the rules laid down in the GIHA Decision. Only if it is not possible to do otherwise, municipalities may deviate from the separate collection obligation with appropriate justification. The municipality must then include this in the Waste Ordinance or the Environment Plan (Article 2(1) GIHA Decree). In considering whether to deviate, the Municipality must take into account the CMP (Article 10.14 WM) and meet the conditions set out in the [assessment framework] in this chapter. The municipality must also regularly reassess whether derogations are still justified in light of relevant developments in collection (Article 3(2) GIHA Decision). This assessment is carried out at least every time new insights and policies are integrated into the CMP on this point.

Municipalities are expected to encourage waste separation by their citizens. Indeed, better waste separation leads to better recyclable flows and contributes to a circular economy. To help citizens separate waste properly, municipalities can use the national yes/no lists for household bio-waste, textiles and small chemical waste (KCA). These can be found in [Waste separation lists] under 'Tools'.

3.3What are the rules applying to the collection point?

Drop-off facilities must be available for bulky household waste (Article 10.22(1)(b) EMA). Further referred to as the recycling centre. The recycling centre is subject to the rules of the Environmental activities decree [Bal]. The recycling centre falls under an environmentally harmful activity (para. 3.5.6 Bal) to which general rules apply. The general rules cover, for example, the processing of different materials and the way specific waste should be stored (e.g. asbestos, gypsum, mattresses, etc). Municipalities are not obliged to accept commercial waste at the collection point.

In addition, Article 3.171(1)(e) of the Bal refers to the detailed rules for the collection point in paragraph 4.51 of the Bal. This states for which waste there must be facilities for its separation at the collection point (adequate level of facilities). It also sets out what the collection point must meet to ensure its effective management. The explanatory notes to Article 4.623 Bal describe the adequate level of facilities and effective management of the waste collection site. On this basis, guidance can be found in [Section 4.3] of this chapter.

A recycling centre is not always run by the municipality itself. Sometimes, the municipality does so together with other municipalities. A company can also do this on behalf of the municipality(ies). This is also the case with municipal waste collection sites that are subject to the rules mentioned in this paragraph (see the explanatory note to Article 3.170 Bal).

3.3.1Rules for keeping waste separate at the collection point

Municipalities must ensure an adequate level of facilities at the collection point (explanatory note to Article 4.623 Bal). This means that for 18 wastes, see [Table 2], facilities are available to collect them separately (Article 4.623, paragraph 1 Bal). Of the 18 wastes, the following 5 wastes are required to be separated at source: electrical/electronic equipment, asbestos, impregnated wood, gas/fire extinguishers/other pressurised containers, and soil (explanatory note to Article 4.623 Bal).

For the remaining 13 waste out of 18, separation at collection points is mandatory, but deviation from source separation is possible. In practice, it is not always physically possible to keep all the household waste types mentioned separate at a collection point. It is not meant to simply merge waste streams. The resulting mixed flows must achieve a similar level of waste separation by post-separation as that achieved by separation at source. This requires a well-selected combination of wastes, also known as smart mixtures. A smart mixture is *never* an aggregation of one of the 13 wastes with the residual waste.

In order to deviate from separation at the source, the collection point owner must apply to the competent authority for custom instructions (explanatory note to Article 4.623 Bal). A tailor-made provision allows the competent authority to omit one or more of the 13 collection facilities provided that an equal level of waste separation is achieved. The owner of the waste collection site must specify in the custom instruction how the equivalent level of waste separation is achieved. If it is not sufficiently clear how post-separation or other processing will take place, the competent authority may refuse the requested tailor-made requirement.

If a waste collection site is allowed to omit one or more collection facilities, the amount of waste materials that are stored in the residual waste container is increased. In this case, it is not desirable that the residual waste should be placed in a press container, as this will make post-separation difficult.

Tabel 2: Rules for keeping waste collection separate

Waste (from households) required separate collection facilitiesArticle 4.623 Bal	Derogations from separation at the source
1. Electric/electronic equipment 2. asbestos 3. impregnated wood 4. gas cylinders/fire extinguishers/ other pressurised containers 5. soil	No deviation from separation at the source is possible because post-separation is not desirable or efficient (explanation of Article 4.623 Bal).
6. Wood A/B 7. plaster 8. roofing waste 9. mixed stony materials (other than asphalt or gypsum) 10. mattresses 11. paper and cardboard 12. flat glass 13. vehicle tyres 14. expanded polystyrene foam 15. bulk garden waste 16. hard plastics 17. metals 18. textiles (other than carpets)	Deviations possible with custom instructions (Article 2.12 et seq.) Bal) provided that the same level of waste separation is achieved by post-separation or other measures (explanatory note to Article 4.623 Bal). Please note that deviation is what brings together waste, also known as mixing. Mixing is an activity subject to permit requirements (explanatory notes to Articles 3.194, 3.196 and 3.197 Bal) see [Waste mixing chapter].
Other non-bulky household waste disposed of separately For example: container glass, batteries, gas discharge lamps, small chemical waste, frying fat, and incontinence materials, which may also be received by recycling points.	If non-bulky household waste is collected at the collection point, it is mandatory to keep it separate. If collection facilities are not available to keep them separate and are deposited together with other waste in a collection facility, mixing permits are usually required (see [Mixing of waste chapter]).

If separate collection of one or more of the 18 streams listed in Table 1 is not offered at the collection point, it must be clearly indicated where this can be done (Article 4.623(2) Bal).

3.3.2Rules for the effective management of the waste collection site

The waste collection site owner must make efforts to ensure proper waste separation at the waste collection site. At the collection point, the least possible amount of waste that ends up in the residual waste container must be monitored and informed on an ongoing basis (Article 4.623(3) Bal). The working instruction on the acceptance and inspection procedures for the waste received must state how this is to be implemented (Article 4.624(2)(a) Bal). The working instruction also states how to prevent the delivery of bulk domestic waste that is not permitted at the site (Article 4.624(2)(b) Bal). In addition, it must state how the maximum amount of waste received is and remains suitable for, and is disposed of for, preparing for re-use and recycling (Article 4.624, paragraph 2, part c of the Bal). A guide has been drawn up to promote continued use at the collection point. Check out the waste or non-waste website guide.

In addition, the facility for mattresses is designed in such a way that the mattresses are not in contact with rainwater (Article 4.623(4) Bal).

3.4 How does the municipalities' duty of care relate to producer responsibility?

Producers are also sometimes responsible for the waste management of products that have reached the waste stage. This is called the Extended Producer Responsibility (EPR). Producers, including importers, are responsible for waste management of tyres, cars, batteries and accumulators, electrical and electronic equipment, textiles, packaging, disposable plastics, flat glass, consumer mattresses, and paper and cardboard. An EPR also applies to diapers and fishing gear. The manufacturer is responsible for the products that have reached the waste stage. Producers can organise the collection themselves or make use of the already existing municipal collection structure. In the latter case, producers will have to consult with municipalities and pay financial compensation. For more information, please consult thewebsite onExtendedProducer Responsibility.

3.5 Who monitors municipalities' compliance with the rules?

Provinces are the supervisory authority for municipalities in the field of the environment. For example, they can check whether a municipality meets the basic services level [see section 4.1] or whether it complies with the rules applicable to the collection point [see section 4.3]. This legal competence of the provinces to supervise municipalities on this subject is found in Articles 124 et seq. of the Municipalities Act.

4. CMP assessment frameworks

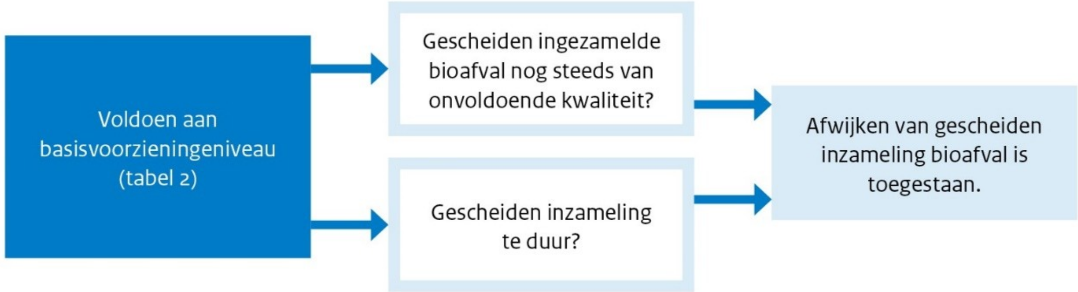
Local conditions, such as waste separation infrastructure and a waste policy adapted to it, determine how waste is separated and collected separately from households to a large extent. Municipalities are required, regardless of local conditions, to collect paper, textiles, household hazardous waste and waste electrical and electronic equipment separately. Under certain conditions, municipalities are allowed to make their own decision on source or post-separation for the bio-waste and metal, plastic and glass streams. In considering these assessments, they should take into account the CMP (Article 10.14 WM).

This assessment framework sets out the conditions for deviating from separate collection for bio-waste (VGF/GFE waste) and metals (including cans), plastics (plastic and drink containers) and glass. In addition, additional guidance for effective management of the waste collection site is described.

4.1 Conditions for deviating from separate collection of household bio-waste (VGF/GFE waste)

Each municipality must collect household bio-waste (also called VGF/GFE waste) separately. In general, the processing of separately collected household bio-waste is cheaper than burning with residual waste. In addition, the Van Afval Naar Grondstof (VANG programme) asks municipalities to separate more waste streams, while ensuring their quality for recycling. However, separate collection of household bio-waste is not equally simple in all situations or automatically leads to good quality. Therefore, derogations from separate collection are possible under certain conditions.

Figure 1: Derogations from separate bio-waste collection



In order to deviate from separate bio-waste collection, the municipality must first comply with the basic level of facilities (see [Table 2]). The basic level of facilities consists of a list of efforts that the municipality must make to facilitate waste separation by residents. If a sub-module is not yet available at this level, it must be improved first, before deciding that bio-waste is not collected separately.

If the municipality meets the basic level of facilities, the following grounds may be used to deviate from separate collection:

1. *The separately collected biowaste is of insufficient quality.* If a municipality meets the basic level of facilities, but if the separately collected biowaste is not of sufficient quality (excess of rejection) and composting is not possible, the municipality may decide to deviate from separate collection. However, new processing capabilities allow the processing of lower-quality bio-waste. Deviations based on this ground will therefore be less relevant in the future.
2. *Separate collection of bio-waste is too expensive.* The cost level of separate bio-waste treatment may be a reason to avoid source separation. Exceptions are allowed if the additional separate collection and processing costs exceed EUR 265 per tonne. This is the difference between the costs of collection at source or post-separation and the costs of non-separate collection. This only concerns additional costs directly linked to actual separate collection, such as additional collection resources, additional routes, additional transhipment, etc. This does not include costs related to meeting the basic level of facilities.

The basic level of facilities includes the use of the [yes/no-list VGF] of households. It describes which waste streams do and do not belong to bio-waste. In order to ensure uniform, separate collection of household bio-waste, it is important that each municipality adopts/does not follow this list.

Synopsis of the table: the development under main criteria 1, 2 and 3 in sub-criteria 1.1 to 1.5, 2.1 to 2.3 and 3.1 to 3.3 is intended as examples of means of compliance with these main criteria. In order to avoid separate collection of household bio-waste, a municipality must demonstrate that these main criteria are met. For criteria 4 and 5, the waiver of separate collection of household bio-waste can be shown to require both the main criteria and all sub-criteria (4.1 and 5.1 to 5.4) to be met. However, municipalities are free to choose the means by which the sub-criteria are met.

Figure 2. Basic services for keeping bio-waste separate

Residents know what is expected	Explanatory Note
1.1 Informing residents	Inform citizens annually – for example with a letter from the municipality – indicating that waste separation is the norm and where to find further information (website, app). Combine this with the offer of a brief waste guide/card, offer of or information on a resource in the home/kitchen and container site list.

1.2 Municipal waste site	With information on the why, what, how and where of waste separation, the option to request a brief waste guide.
1.3 Information package, in several languages	To be provided by default to new residents, including brief waste guide.
1.4 Door-to-door action	For special areas, such as city centres and high-rise buildings, residents are actively informed about the why, what, how and where of waste separation. This can be combined with an offer of a brief waste guide and a resource in the home/kitchen area. Once a year.
1.5 Campaign	Once a year, provide residents with information on the why, what, how and where of waste separation at municipal level via the (social) media.
Residents know what comes next (knowledge of segregation)	Explanatory Note
2.1 Send brief waste guide/not-list, for example, prickboard, refrigerator, drawer.	1 or 2 A4 with information on what, how and where of waste separation, in solid paperboard, for robust use and storage.
2.2 Separation info on containers	Outdoor containers (mini-containers, collection containers, underground or otherwise) are provided with colours, pictograms and text indicating the intended waste stream and its meaning.
2.3 Municipal site and app, if any	Information on the why, what, how and where of waste separation is available on the municipal website, with the option to request the brief waste guide.
Residents know why waste separation is useful	Explanatory Note
3.1 Via information package	Residents can request a waste separation information package from the municipality. New residents automatically receive the information package.
3.2 Disseminate infographics, (link to) videos, social media	The municipal website provides visual information on how the various waste streams are collected and processed. These visuals are also actively disseminated on social and other media.
3.3 Campaign	Once a year, inform and motivate residents about the why, what, how and where of waste separation at municipal level via the (social) media.
Residents know where/how/when to get rid of it	Explanatory Note
4.1 Information on the collection system, collection and transfer, locations of containers, collection days, collection site for bulky household waste, additional collection points for certain flows from shops, construction markets, etc.	A waste guide is available on the municipal website, which provides information on how the municipality's collection system works specifically for the various waste streams. This information is also part of the information package and can be sent separately on request. It also informs citizens on how to present the different types of household waste.
The collection containers and facilities are good (opportunity)	Explanatory Note
5.1 Clean and well-maintained	Waste facilities in public areas and the surrounding area are actively kept clean. Damage and graffiti are also promptly repaired.

5.2 Easily accessible	Waste facilities in public areas are easily accessible to everyone. There is a step-up and sufficient space for wheelchairs. Obstacles, such as bulky waste left next to the container, are quickly removed.
5.3 Working, available, not full	The waste facilities can be used. Technical failures are remedied quickly. Containers are prevented through sufficient capacity and timely emptying.
5.4 Provide good information and pictograms, possibly colour-coded	Outdoor containers (mini-containers, collection containers, underground or otherwise) are provided with colours, pictograms and text indicating the intended waste stream and its meaning. Citizens are provided with clear information on what can and cannot be deposited in each collection facility.

4.2Conditions for deviating from separate collection of metal (including cans), plastic or glass

In many cases, municipalities can achieve a similar result to separation at the source for metals (including cans), plastics (plastics and drinks cartons) and glass with certain types of post-separation. Post-separation can only be chosen if this comparable level is indeed achieved. Table 3 shows which types of post-separation can be used.

For metal, a municipality may also waive separate collection if it can prove that the metals are recovered for recycling in the course of the mixed waste processing. This is in any case the case if the residual waste is incinerated in a Dutch waste incineration plant because it requires the separation of metals from the bottom ash.

The glass should not be separated from the residual waste. However, municipalities may collect glass in combination with metals, provided that it is followed by subsequent separation.

Tabel 3: Permissible post-separation shapes for metal, plastic and glass

Waste	**Post-separation from residual waste allowed?**	**Combined collection of dry components followed by post-separation allowed?**
Metal	Yes	Yes, the following combinations: Plastics, Metals, Drinking Suits (PMD) Plastic, Drinking Suits (PD) Metal, Glass (MG)
Plastics (plastics and drinks cartons)	Yes	Yes, the following combinations: Plastics, Metals, Drinking Suits (PMD) Plastic, Drinking Suits (PD)
Glass	No	Yes, the following combination: Metal, Glass (MG)

4.3Effective management of the waste collection site

Management of the waste collection site must also aim for the most effective implementation possible (explanatory note to Article 4.623 Bal). Effective management of the collection point ensures compliance with the rules set out in Article 4.623 Bal. For example, to prevent waste from ending up in residual waste, while specific facilities are available for it. The following guidelines apply to the effective management of the waste collection site:

1. The collection facility targeted is clear to citizens. The collection site facility supports the correct use of the various collection facilities.
2. Qualified staff is available to answer citizens' questions and to monitor the correct use of the various storage facilities.
3. The design and management of the collection point should take into account accessibility and convenience for citizens. This includes not only physical accessibility, but also reduction of waiting times and administrative procedures.
   It is therefore recommended to ensure that:
   a. to ensure prompt access control and payment operations at the gate (if any) by using, for example, a unique access pass, balance card, chip card or contactless payment;
   b. containers do not hinder the routing to the public and sufficient space is available to allow stationary cars to pass through the site;

c. that containers with high waste inputs are not located immediately in front of the entrance (due to the risk of congestion at the entrance) but rather more towards the back and spread to improve visitor flow;
d. the compression containers are used sparingly; while for some waste types more waste can be compacted in a container, waste compacting takes time, which jeopardises the smooth flow of traffic through the collection point. Also, the perching orifice (the funnel) is limited, so that it can lead to a bone check.

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

The VANG Household Waste Implementation Programme (VANG Huishoudelijk Afval) encourages and assists municipalities in introducing or improving waste separation in their municipalities. The Ministry of Infrastructure and Water Management is conducting a study on the standardisation of household waste collection in the Netherlands. If this survey shows that further standardisation is needed or desirable, this chapter will be adapted accordingly.

In order to stimulate reuse and repurposing at waste collection sites, the [Guide on continued use at waste collection sites] has been drawn up. It provides practical tips and legal frameworks on further use. In the future, it will be examined whether some parts of this guide are more mandatory. Relevant stakeholders will be consulted when this exploration is launched.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

6. Resources and more information

For resources and more information:

- About the VANG Implementation Programme - Household Waste and municipal resources to improve separate collection, see: www.vang-hha.nl.
- On how to encourage residents to separate waste, see: Guide: how do your residents encourage them toseparate their waste? Environmental Focus.
- On the Household VGF/LT lists, textiles and KCA, see: [Waste separation lists] under Tools in the CMP.

Circular Materials Plan Design

Use of raw materials and waste prevention

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

This part of the CMP does not contain any assessment frameworks.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

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Website: circulaire materials plan.nl

Home > Topics > Resource use and waste prevention

Use of raw materials and waste prevention

There are various ways businesses can work towards a circular economy. One way of doing so is to implement measures in their business processes to ensure the efficient and effective use of raw materials and the prevention and reduction of waste. This section deals with the use of raw materials and waste prevention in business processes.

At present, very few mandatory measures have been incorporated into legislation. However, the Living Environment Act (OW) provides the legal basis for competent authorities to and to be able to set obligations on the use of raw materials and waste prevention in the business processes. This is done during the permit granting process for the environmental permit and is in particular for the implementation of the European Industrial Emissions Directive (IED). However, the obligations laid down by law in this regard are often formulated in a very general way and are laid down in various places. Therefore, this chapter first explains the precise obligations under the Environment and Planning Act for the environmental permit.

The CMP then provides guidance for the licensing authority and supervisor on how to comply with this legislation in the [Guidance on the use of raw materials and waste prevention in the environmental permit]. In short, the legislation sets out what agreements must or can be reached, and this section looks at how to put them into practice. This chapter and the guidance do not contain a review framework for the granting of permits that competent authorities must take into account according to Article 10.14 of the Environmental Management Act (Wm).

This chapter does not deal with product legislation for, for example, sustainable product design, the use of chemicals in products or for the mandatory use of recyclate in products. The [legislation overview section] states which legislation applies to products and who monitors them. If businesses use secondary materials, it is important to know whether their operations also have to comply with waste legislation. For this, they use the [chapter waste or non-waste]. In addition to measures for the use of raw materials and waste prevention, separation of waste for safe and high-quality processing is also important. This is a legal obligation for all companies. This has been explained and further elaborated in the assessment framework of [Keeping corporate waste and hazardous waste separate].

The Netherlands Waste Prevention Programme(APP) provides an overview of all measures the Netherlands is taking to prevent and reduce waste. While the APP lists ongoing initiatives, it does not pass on the decisions taken by co-governments or bind otherwise.

1. Target audience

This chapter is aimed in particular at licensing authorities and industrial and manufacturing supervisors.

For **permit authorities and supervisors**, this chapter provides an insight into the legal basis for taking resource use and waste prevention into account in their tasks under the Environment and Planning Act (OW). In addition, the [Guidance on the use of raw materials and waste prevention in the environmental permit] provides guidance on how to fulfil these obligations.

This section enables businesses to find out what type of measures they can take in terms of resource use and waste prevention in their business processes. This chapter focuses on the environmental permit as it provides the possibilities to impose measures on the use of raw materials and prevention of waste. Therefore, this section is particularly relevant for **companies requiring a licence**. This applies in particular to the environmental permits for Seveso-establishments,ippc-installationsand some other large environmentally harmful industrial installations.

2. Importance for the circular economy

Moving towards a circular economy involves looking not only at waste, but also at how we deal with raw materials along the whole chain. TheNational Circular Economy Programme(NPCE) describes four circularity strategies: reducing resource use, substitution of raw materials, extending product life and high-quality waste treatment.

Circular design and business models can help businesses reduce the need for products, ensure the safety of products and make them from renewable or recycled raw materials, survive long and have high-quality recycling.

In addition, business process choices have an impact on the types and quantities of raw materials and consumables used and the quantity and types of waste generated. It is important for the transition to a circular economy that businesses take measures in these business processes to reduce the consumption of primary and non-renewable raw materials, use of raw materials with less environmental impact, prevent waste, and separate and recycle waste to a high standard.

3. Policy and legislation

This section first briefly outlines the legislation that requires resource use and waste generation. This includes legislation for products and for the processes of making the products. The legal bases for incorporating this into permits are then described for business processes in the Netherlands.

3.1Legislation for products and processes

Companies have to deal both with legislation for the products they place on the market and with legislation for the processes at their premises. In addition, some companies are subject, for example, to the legislation on sustainability reporting (in English the 'Corporate Sustainability Reporting Directive') and to attention on sustainability aspects in the chain (in English the 'Corporate Sustainability Due Diligence Directive').

The product legislation consists, for example, of the REACH Chemicals Regulation and the Ecodesign Regulation for the Sustainable Design of Products. REACH places requirements on the marketing and use of chemicals in products. The Ecodesign Regulation sets out requirements for the design of products by product group, such as reparability and recyclability.

To reduce the use of raw materials and waste in business processes, the European Industrial Emissions Directive (IED Directive 2010/75/EU) of interest. It has been implemented in the Netherlands in the Environment and Planning Act. The Industrial Emissions Directive applies to business processes that have a significant impact on the environment. One of the principles of the IED is that the level of environmental protection in the permit requirements is (also) determined by the application of the best available techniques (BAT) at the installation concerned. For many industries, this includes requirements on raw materials use and waste prevention. The IED has been recently amended and the IED addresses even more measures to prevent the generation of waste and optimise the use of resources and energy. This change is yet to be implemented in the Dutch legislation. For more information on the amended IED, see [Section 5 'Future plans']. The [legislative overview chapter] provides more guidance on the different types of legislation.

3.2Use of raw materials and waste prevention in the licence

In the Netherlands, the Environment Act (Ow) governs the licensing, monitoring and enforcement of business processes that have an impact on the environment. The OW and its underlying decisions specifically address the use of raw materials and waste prevention in its environmental permit. When assessing and drawing up an environmental permit, various points of attention are given to the use of raw materials and the prevention of waste. For example, the competent authority must check certain parts of the application for a permit on a compulsory basis, for example whether the application requirements have been met. At other times, the competent authority may decide whether the imposition of requirements is necessary, such as the possibility of attaching requirements to the licence.

The [guidance] to this chapter further explains the steps in the permit granting process and the associated obligations and options for requirements. It provides competent authorities with guidance on how to fulfil these obligations and possibilities.

The sections below describe the legal basis of what the competent authority should and can do for the use of raw materials and waste prevention in the licensing process. It explains for which activities this applies. The application requirements, assessment rules, best available techniques and environmental impact assessment are then discussed for the assessment of the permit. Lastly, the link between instructions and the licence is described.

An environmental permit allows citizens, businesses and authorities to apply for permission to carry out activities in the living environment. There are a number of issues that may require a permit, such as building, but also impact on the environment. The Environmental activities decree [Bal] lists several environmentally harmful activities that are subject to rules.

As a basis, Article 4.22 of the OWstates that these environmentally harmful activities are governed by, inter alia, rules with a view to the economical use of raw materials and efficient waste management. The Bal specifies what environmentally harmful activities are, which of these activities are subject to permit requirements, and which rules apply to the activities. For example, several production processes involving raw materials such as ores, metals, plastics, wood, paper and food have been designated as environmentally harmful activities. Taking preventive action is an important criterion for the authorisation of environmentally harmful activities.

The use of raw materials and waste prevention can be addressed in both new licences and an amendment to an existing licence. In the case of existing licences, the licence holder may request a change of licence or the Authority may change the licence. When applying for a licence, the competent authority is obliged to consider the use of raw materials and waste prevention if the application has an impact on this. These obligations and possibilities are explained in the paragraphs below.

In order to apply the best available techniques, the company and the competent authority are obliged to update the licence within four years (see [section 3.2.4 'Assessment of best available techniques']). In addition, a competent authority still has the power to amend an existing or granted licence ex officio on the basis of Article 5.34 Owand Article 8.97 Bkl. The competent authority should then justify why it considers it necessary, for example because of new scientific evidence, or because new improved circular techniques or practices are available. In doing so, the Authority may not leave the basis of the licence application. The application for authorisation determines what can be authorised. For example, is a certain processing technique authorised? In such cases, the competent authority may not of its own motion prescribe a different technique. This would mean leaving the basis of the application.

When applying for a licence, a company must provide information on the various topics that may be covered by the licence. This also applies to data on raw materials, excipients and waste. The competent authority must then assess the completeness of the application for authorisation. If the data is incomplete, additional data may be requested.

The application requirements for living environment permits are specified in the Living Environment Order (Or). The general application requirements that apply to all activities are limited, and relate to the description of the activity and the location. There are also more extensive and specific application requirements for different types of environmentally harmful activities. Article 7.27 Orrequests information on, inter alia, raw materials, excipients and waste for certain activities. This provides the basis for legislation to assess the use of raw materials and the generation of waste in these activities.

Article 7.27 Environment Regulation

An environmental permit application to operate an IPPC installation, other environmentally harmful installation, Seveso establishment, mining operation, military seaport or airport, perform environmentally harmful activities in the mineral products industry or foodstuffs industry or incinerate or process industrial or hazardous waste, as referred to in Chapter 3 of the Environmental Activities Decree, shall include the following information and documents:

a. a description of:

1°. the environmentally harmful activities to be carried out and the installations;

2°. **the raw materials, accessory materials, other substances and energy** used or generated;

3°. the emission sources of the activities;

4°. the nature and extent of the projected emissions into soil, water and air, with an overview of the significant environmental impacts of the emissions;

5°. the site condition of the installation;

6°. the techniques used to prevent or, if that is not possible, to reduce projected emissions into the soil, water and air;

7°. **a description of the measures taken to prevent or, where that is not possible, to reduce the generation of waste and to prepare for reuse, recycling or other recovery of waste**;

8°. a description of the measures taken to monitor emissions into the soil, water and air;

9°. the main alternatives examined by the applicant for the proposed technology, techniques and measures; and

10°. a description of the measures taken to use energy efficiently; (...)

The application requirements do not apply to all companies, as shown in the first sentence of the article. For each environmentally harmful activity listed in the Bal, it has been determined whether the permit application must comply with the application requirements set out in Article 7.27 Or. The [guide] provides in the Annex a list of the environmentally harmful activities that are subject to permit requirements.

Next, the assessment rules for granting permits for environmentally harmful activities follow from Article 8.9 Decree on Quality of Environment(Bkl). These are the criteria against which the application for a licence must be assessed in order to determine whether a licence can be granted.

Article 8.9 Environmental Quality Decree
1. To the extent that an environmental permit application relates to an environmentally harmful activity, the environmental permit is only granted if the following criteria are met:

a. **environmental pollution is integrated by the activity** or, if this is not possible, limited;

b. emissions to air, water and soil and **the generation of waste resulting from the activity are prevented or, where that is not possible, limited** to achieve a high level of protection of the environment as a whole;

c. all appropriate **preventive measures are taken against environmental pollution**;

d. the best available techniques eligible for the activity are applied (...)

Waste prevention and the use of raw materials are part of these assessment rules. In any case, the competent authority must assess whether sufficient measures have been taken to prevent or reduce waste (Article 8.9(1)(b) Bkl). For the transition to a circular economy, it is important not only to look at waste, but to look at preventing environmental pollution in an integrated way. So that the preventive measures to reduce the environmental impact through raw materials use and waste generation are considered in conjunction.

The prevention of environmental pollution is central to the granting of an environmental permit (Article 8.9, paragraph 1, a and c of the Bkl). The definition of environmental pollution in the Bkl comes from the Industrial Emissions Directive (IED) and has been formulated broadly.

Environmental pollution: 'direct or indirect inputs of substances, vibrations, heat or noise in air, water or soil by human activities that may affect human health or the quality of the environment, cause damage to material goods, or impair or interfere with the experiential value of the environment or other legitimate uses of the environment.'

The use of natural resources, the use of raw materials and the generation of waste is directly and indirectly responsible for environmental degradation and should therefore be avoided or reduced as far as possible. When assessing the licence, the
the permit-granting authority therefore checks whether the company, for example, is taking sufficient measures to prevent the generation of waste and which raw materials are used. Businesses should demonstrate that they are taking sufficient measures to prevent environmental pollution. This is further explained in the [guide].

The competent authority must also assess whether the permit application complies with the best available techniques (BAT). This follows from Article 8.9, paragraph 1, under d Bkl and Article 8.10 Bkl. It states that the authorisation will take into account the BAT-conclusionsand information documents adopted by the European Commission. The BAT conclusions also address requirements for raw materials use and waste prevention for many industries.

Both new and existing permits must comply with BAT. If a new BAT conclusion is published, the company and competent authority have 4 years to comply with the new BAT conclusion (Articles 8.98 and 8.99of the Bkl).

If BAT conclusions have not been determined for an environmentally harmful activity, the competent authority may decide on the best available techniques. This is also possible if the applicable BAT conclusion does not address all the environmental impacts of the activity. Pursuant to Article 8.10(2) Bkl, when determining BAT, the competent authority must take into account, among other things: the application of low-waste techniques (a) and the consumption and nature of raw materials (i).

The [guide] describes some examples of BAT conclusions for the use of raw materials and waste prevention.

Article 8.10 Environmental Quality Decree

1. When assessing whether the environmentally harmful activity complies with the criterion referred to in Article 8.9(1), preamble and (d), the best available techniques shall be determined taking into account the BAT conclusions and information documents referred to in Annex XVIII(A).

2. In any case, if an environmentally harmful activity is not covered by BAT conclusions or if the applicable BAT conclusions do not address all the possible environmental impacts of the activity, the best available techniques will take into account:

a. **the application of low-waste techniques;**

b. **the application of substances that are less hazardous than substances or mixtures as referred to in Article 3 of the CLP Regulation;**

c. the development of techniques for the recovery and the re-use of the emitted and used substances and of waste;

d. similar processes, devices or methods of business management that have been successfully tested in practice;

e. technical progress and the development of scientific knowledge;

f. the nature, impact and volume of the emissions;

g. the expected date and time of the start of the activity;

h. the time required to improve the application of the technique;

i. **the consumption and nature of raw materials, including water, and energy efficiency;**

j. the need to prevent or minimise the adverse effects of the emissions and the risks to the environment;

k. the need to prevent accidents and reduce their impact on the environment; and

l. the information documents referred to in Annex XVIII(A).

The legislation on environmental impact assessment (EIA) also provides pointers for the use of raw materials and waste prevention in the granting of licences. The law prescribes when an EIA assessment is to be carried out and in which cases an EIA must be drawn up. The results of an EIA may be involved in the assessment of the decision on the application for an environmental permit.

In the European Directive on the Assessment of the Effects of Projects on the Environment (EIA Directive, Directive 2011/92/EU) focuses on the description of production processes, the use of primary raw materials and for waste. The Directive indicates that a project should describe the use of natural resources, taking into account, as far as possible, the sustainable availability of these resources.

The EIA Directive has been implemented in the Environment Act (OW) and Environment Decree (Ob). The rules for the environmental impact assessment and EIA assessment procedure are set out in Section 16.4 ofthe OW. The legislation on EIA is not applicable to all companies. It can be derived from Annex V of the Obwhether an environmental impact assessment or a merger assessment is applicable to the environmentally harmful activity.

Section 11 of the Obdescribes the requirements for the environmental impact assessment itself and the requirements for the communication for the EIA assessment procedure. The EIA review is carried out under Article11.10 Obwhich requires, among other things, the provision of information on expected residues, waste and the use of natural resources. In the case of a project-mer, the Authority may ask the Authority to examine alternatives on the use of raw materials and the prevention of waste, in derogation of the envisaged initiative. This is further discussed in the [Guide].

3.2.6Conditions attached to the licence

The competent authority has the option to lay down provisions in the environmental permit. The Authority will lay down the conditions under which the licensee may carry out the licensed activity. This includes, for example, techniques to be used or measures to be taken.

Various articles have the power to do this:

- Article 5.34 of the Owstates that provisions may be linked to the national assessment rules. In this case, these are the assessment rules contained in Article 8.9 of the Bkl. As described in [section 3.2.3 ‘Assessment rules for licence applications’], waste prevention and the use of raw materials are a direct and indirect part of the assessment rules.
- Article 8.29 Bklalso provides for the power to include regulations on the prevention of waste or efficient waste management. This may be a basis for prescribing a preventive study or specific measures.
- Article 8.32 Bklprovides for the possibility of linking requirements to the keeping and collection of data. This may require, for example, the registration of (secondary) raw material use.

When laying down rules, the competent authority is subject to restrictions. For example, it is not possible to authorise anything other than what was requested by the initiator. Furthermore, the requirements must not conflict with product legislation.

In any case, it is clear that the application for an environmental permit must include an assessment of the use of raw materials and waste prevention and that provisions can be included for this purpose. The [Guide] provides further guidance in this regard. In addition, the guide highlights some of the issues for monitoring compliance with the permit requirements.

4. CMP assessment frameworks

This chapter does not contain an assessment framework that competent authorities should take into account under Article 10.14 of the Environmental Management Act. The chapter describes the legislation in force concerning the use of raw materials and waste prevention and the [Handreiking aardgasgebruik en afvalpreventie in de omgevingsvergunning] provides permit authorities and regulators with further guidance on the permit granting process and its supervision.

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

This section in the CMP and the accompanying guidance indicates to permit and supervisory authorities what resource use and waste prevention should and can take with them in their work. During the implementation period of the CMP, we monitor the experience of environmental services on raw materials use and waste prevention in authorisation and supervision. If at any time *best practices* are available to incorporate prevention into the environmental rules, these will be included in the guidance.

In addition, the amended Industrial Emissions Directive will be implemented in the Dutch legislation in the coming years. More attention is given to waste prevention and the use of raw materials. This will oblige companies to prepare an environmental management system and transformation plan. The environmental management system includes measures to prevent the generation of waste and optimise the use of resources. The transformation plan will provide information on how the company will transform the plant in the period 2030-2050 to help create a climate neutral and circular economy by 2050. An audit entity assesses whether transformation plans comply with the established requirements. The impact of these new obligations on national legislation and the permit granting process will become clear in the coming years. This will be included in the appropriate time.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

6. Resources and more information

Resource use and waste prevention guide

This chapter describes the legislation in force. The [Guidance on the use of raw materials and waste prevention in the environmental permit] provides permit authorities and regulators with further guidance on the permit granting process and its supervision.

IPLO on Living Environment Act

All information on the Environment Act and related decisions and arrangements can be found on the iplo.nlwebsite of the Netherlands Information Point.

Experimental room

Authorisation may also allow for experimentation. More information is provided by the Circular Economy Testing Guideof the Ministry of Infrastructure and Water Management. The guide covers possibilities, process descriptions and tips for experimentation within the existing legal space from the entry into force of the Environment and Planning Act. In addition to the guide, there is a separate document containing the annexes.

Circular Materials Plan Design

High-quality processing

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

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Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

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Home > Topics > High-quality processing

High-quality processing

It is crucial to keep materials in the production chain. In a circular economy, waste is managed in the highest quality possible way and with a negligible risk for the environment and human health. The law often requires authorisation to carry out a certain processing operation. This part of the CMP helps to distinguish between high-quality standards in order to determine whether such a licence or exemption can be granted.

The CMP explains what is more and less high-quality. By elaborating the waste hierarchy, a definition and starting points for high-quality recycling, the minimum standard instrument and the cost criterion, companies and competent authorities will know how to assess techniques under the assessment frameworks set out in the CMP. The accompanying guidance provides examples and more comprehensive assessment frameworks.

Finally, it outlines how the State is working on measures to prevent the incineration or landfilling of recyclable materials. It identifies the first material chains to be addressed and the role of the CMP in this regard and could eventually become.

Guidance tools
Assess forms of recycling
Minimum standard for processing
Use of cost criterion
Prevent incineration and landfill of recyclable waste

Home > Topics > High-quality processing > Guidance tools

Guidance tools

This section outlines when a waste processing method is of higher or lower quality, how this will be determined on a case-by-case basis, and what it will mean for waste management initiatives to be approved or banned.

1. Target audience

Assessing the quality of a proposed form of waste treatment is a crucial part of the work for the **permit issuer** of waste processing initiatives. This section explains how to do this and which resources (waste hierarchy, minimum standard, mLCA) when and how to use them.

By extension, the chapter is also relevant for **waste processors or initiators of new initiatives** for waste processing. It is important for them to know how the initiative is assessed by a permit-granting authority, what is the minimum standard the permit-granting authority uses as a reference and whether it qualifies for a permit.

2. Importance for the circular economy

Reducing consumption (narrow the loop), promoting sustainable design and fostering reuse (slow the loop) is important. It is also crucial to keep materials that have become waste through recycling in the production chain (close the loop) in order to achieve a circular economy.

In a circular economy, waste is managed in the best possible way with a negligible risk for the environment and human health. This implies that the most high-quality processing of a waste will also contribute most to achieving a circular economy. The contribution to the realisation of a circular economy is therefore an important starting point for distinguishing between higher and lower quality processing.

However, with this starting point alone, we do not yet have a way of assessing whether a given case is of a higher or lower quality. Specific trade-offs must be made on a case-by-case basis. In one case, for example, it may be better to keep as much material in the chain as possible, in another case it is better to focus on the highest-quality recyclate, even if this leads to more landfilling or incineration residue.

It is important to be able to distinguish between high-quality and low-quality processing for specific cases. Only then do we understand each other well, we all think of the good things, we all approve and we stimulate those things that ultimately fit best in the safe, circular economy that we all aim for.

3. Policy and legislation

This section looks into some of the legal frameworks that are important for the highest quality management of waste. First, a number of rules will be laid down for
Explains waste processing operations under the Environment and Planning Act (Omgevingswet). The waste hierarchy is then considered in the EU Waste Framework Directive (WFD) and the Environmental Management Act (Wm). The translation of this legislation into the CMP and how it is used in practice by a licensing authority is also discussed. It also addresses the links between the waste hierarchy and the minimum standard and how these two instruments implement the principles set out above.

3.1Principles

The pursuit of a circular economy follows two principles:

1. Ensure that raw materials are retained for a subsequent application;

   This means focusing on the form of processing that best contributes to achieving a circular economy.

2. Ensure that waste management and the re-use of materials do not pose risks to the environment and human health;

   The aim is to monitor the quality of the raw materials of the future and to ensure that keeping materials in the chain does not pose risks to the environment and human health due to contamination.

These two principles are derived from the waste policy objectives at European (Waste Framework Directive) and national (Environmental Management Act) level. Both principles ensure the safe, efficient and effective management of raw materials.

3.2Granting of permits for waste processing

The rules in the Living Environment Law (Activities) Decree(Bal) apply to waste management. This includes several environmentally harmful activities for waste management, such as the processing of industrial waste or hazardous waste. Depending on the activities, there are a number of general rules that apply, and certain activities involving waste are also subject to permit requirements.

Licence applications must be reviewed by the competent authority. The competent authority must take the CMP into account. This is stated in Article 8.9, paragraph 2 of the Decree on Quality of Environment(Bkl). This means that competent authorities should use the CMP as an assessment framework when assessing authorisations (see further details [section on review frameworks]).

The CMP further develops the waste hierarchy of the EU Waste Framework Directive for this purpose. In addition to this chapter, the assessment frameworks of the chapters [mixing waste], [assessing forms of recycling] and [minimum standard for processing] are particularly relevant for the granting of permits for sufficiently high-quality forms of waste processing. In addition, the CMP for specific waste sets out the assessment framework for high-quality processing in the [chain and waste plans]. Requirements may be included in the granting of licences, such as on the prevention and reduction of waste and on efficient waste management (Article 8.29 Bkl).

The Bkl requires competent authorities to update permits whenever the CMP is amended. Article 8.98(2) Bkl provides that the competent authority shall, within one year of the CMP taking effect, examine whether the environmental permit meets the minimum quality of processing. Pursuant to Article 8.102 Bkl, it is possible to withdraw the permit in the interest of efficient waste management.

3.3The waste hierarchy in the CMP

The EU Waste Framework Directive (WFD) indicates that the waste hierarchy is to be applied when drafting legislation and policy initiatives for the prevention and management of waste. The waste hierarchy is set out in Article 4 of the WFD and is reproduced in Article 10.4 of the Environmental Management Act (Wm).

The WFD and the Wm form the basis of the waste hierarchy in the CMP. The CMP is fully in line with this legislation, but has been refined on two points compared to the WFD and WM versions. The waste hierarchy in the CMP is as follows:

Figure 1: the waste hierarchy within the CMP

Hoofdindeling CMP	Trede afvalhiërarchie in het CMP
Geen afval	a. Preventie / hergebruik
Nuttige toepassing van afval	b. Voorbereiding voor hergebruik
	c1. Recycling van het oorspronkelijke materiaal in een gelijke of wat betreft de vereiste kwaliteit van het materiaal vergelijkbare toepassing, waaronder ook mechanische recycling en chemische recycling in de vorm van 'monomeer chemische recycling' en 'solvolyse' maar niet als 'chemische recycling via basischemicaliën' (*)
	c2. Recycling van het oorspronkelijke materiaal in een niet gelijke of wat betreft de vereiste kwaliteit van het materiaal niet vergelijkbare toepassing en/of chemische recycling via basischemicaliën (*)
	d. Andere nuttige toepassing, waaronder energieterugwinning
Verwijdering van afval	e1. Verbranden als vorm van verwijdering
	e2. Storten of lozen

(*) Naast deze vormen van recycling kent het CMP ook nog de term 'recyclingstandaard'. Dit is een vorm die in het algemeen valt onder c1 of c2 of bestaat uit een combinatie daarvan, maar die in het betreffende sectorplan expliciet als 'recyclingstandaard' is aangemerkt. Op de consequenties van het aanmerken van een vorm van verwerking als recyclingstandaard wordt in hoofdstuk 'vormen van recycling beoordelen' verder in gegaan.

The differences with the waste hierarchy in the WFD and the WM are:

1. The waste hierarchy in the WFD only provides for one step for recycling, but in the CMP we distinguish between forms of recycling in steps c1 and c2. This is discussed in more detail in [Assess recycling forms].
2. The waste hierarchy in the WFD only provides for one step for disposal, but in the CMP we distinguish between disposal in steps e1 and e2.
   - In the area of 'disposal', 'incineration as a form of disposal' is preferable to 'landfilling' as a matter of policy. This is therefore reflected in the waste hierarchy as set out in the CMP.
   - In addition, the CMP's waste hierarchy explicitly expresses that 'discharge' is considered a form of disposal and not a form of recovery.
     Discharge is not circular and is ranked at the same level as landfilling in the hierarchy.

This is intended to provide clarification and does not mean that the CMP policy on discharge is included. 'Discharge' does occur in some waste plans of the CMP in the sense that discharge of a fraction from the high-quality of waste management is not a problem, but the CMP is not the framework for checking actual discharges. Rules on discharge can be found in the Living Environment Law (Activities) Decree(Bal) and in addition in the Water Act and the Environment Plan.

3.4Distinction between higher and lower quality processing

The basis for distinguishing between higher and lower quality forms of waste processing is the waste hierarchy. The starting point is 'the higher a form of processing is in the hierarchy, the higher the quality of the form of processing'. Naturally, the most high-quality form of processing is in principle preferred (see box) provided it is safe for the environment and public health.

Examples of the use of the waste hierarchy

- If a waste can be recycled or incinerated, recycling is preferred.
- For waste not suitable for recovery, incineration is preferred to landfilling within disposal;
- If a waste can be recycled differently, 'recycling of the original material in an application that is the same, or that is similar in terms of required material quality, including mechanical recycling and chemical recycling in the form of monomer chemical recycling and solvolysis[1]' is preferred to 'recycling of the original material in an application that is not the same, or that is not similar in terms of required material quality, and/or chemical recycling via basic chemicals'.

3.4.2The minimum standard defining the waste hierarchy

A minimum standard has been included in the chain and waste plans in the CMP for many wastes processed in the Netherlands. The minimum standard indicates the minimum quality of processing and is a specific implementation of the waste hierarchy for the waste in that chain or waste plan. The minimum standard is a reference point in granting permits for waste management: in the case of applications or initiatives for waste treatment, the competent authority must primarily assess against the minimum standard of the corresponding chain or waste plan. See also [section on minimum standard for processing] for more details on the use of the minimum standard in the context of licensing.

3.4.3The assessment in practice

1. In determining whether a certain form of processing is sufficiently high, it is first of all important whether the CMP has a minimum standard for that waste. If the CMP contains a minimum standard for the waste concerned, it follows from the minimum standard whether the form of processing is of sufficient quality to obtain a licence. The minimum standard is an implementation of the waste hierarchy and establishes in principle the **minimum**. This means that the forms of processing may also be authorised at a higher step of the waste hierarchy (see the framework for an example). [Section 3.4.4 'Some particular situations'] includes aspects that may lead to a different assessment in specific cases than would follow directly from the waste hierarchy.

The minimum standard and the waste hierarchy

If the minimum standard for a particular waste is 'use as fuel' (a form of 'other recovery; level d of the waste hierarchy), not only that level may be approved, but also the higher steps of the waste hierarchy such as recycling. Dumping or incineration as a form of disposal and thus without energy recovery is not eligible for a permit.

See also [section on minimum standard for processing] for more details on the use of the minimum standard in the context of licensing. This includes, for example, the situation where the waste is treated partly on a higher step, but also partly on a lower step in the waste hierarchy.

2. For those wastes for which no minimum standard exists in the CMP, the competent authority assesses the waste hierarchy directly. This means, for example, that a permit for incineration (as

a form of disposal) or primary use as fuel (as a form of recovery) will not be granted if the competent authority determines that recycling is possible for the waste in question. In addition to the waste hierarchy, issues such as costs (see also [section on use of cost criterion]) or available processing capacity may play a role.

3. For the cross-border transport of waste covered by a chain or waste plan in the CMP, a review framework has been included in those waste and chain plans. At the time of formulation

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1 Solvolysis: Technique for feeding wastes into a solvent. Precipitation enables the material to be recovered pure again. The polymers remain intact and are not broken down into smaller parts, as in the other techniques.

Among other things, the waste hierarchy has also been taken into account. For waste that is not covered by a waste or chain plan, the competent authority, in this case the Human Environment and Transport Inspectorate, assesses the waste hierarchy directly to determine whether the proposed cross-border transport can be considered of sufficiently high quality for the waste in question.

1. In specific cases, the minimum standard provides that processing higher than the minimum standard does not qualify for a licence, or is only eligible under certain conditions. For example, in specific cases, incineration or landfilling and recycling are explicitly excluded in order to prevent the spread of contaminants. Thus, this deviates from the general rule of point 1 (see above) that the minimum standard is always the minimum and that higher on the waste hierarchy may also be authorised.
2. In specific cases, costs may be a reason to allow processing to proceed to a lower level of the waste hierarchy. The same applies to the presence of substances of very high concern. Again, this may in specific cases be a reason to allow processing on a lower step of the waste hierarchy. See details in [Chapter use of cost criterion] and the CMP chain and waste plans under [materials].
3. In certain cases, it can be demonstrated through an mLCA that a form of processing that is lower-grade according to the waste hierarchy may still be authorised, as the environmental impact does not exceed that of the minimum standard.

For further details on these three special situations, please refer to the [Guide to the use of minimum standard] and the [Guide to the use of mLCA].

The term cascading is often used with biotic raw materials when multiple forms of processing occur at biotic flows. Cascading is a further elaboration of parts of the waste hierarchy that is specific to biotic flows. The box below briefly explains the different types of cascading that are distinguished.

Different types of cascading

- Cascading ‘**over time**’ refers to the use of raw materials (usually biomass) for successive applications, such as timber that is later used as particleboard and ultimately bioenergy. The application that leaves most of the possible applications open at the end of each phase is preferred.
- Cascading ‘**in function**’ means separating biomass into functional components by bio-refining, each of which is used as effectively as possible. For example, proteins and sugars can be extracted from the biomass for a variety of applications that would not be evident when bio-waste is fully processed, for example through composting.
- Cascading ‘**in value**’ means using biomass in the application with the highest added value. This can be economic, environmental or social value. An example of cascading in economic value is the use of straw for ethanol production. An example of cascading in environmental value is the use of fresh wood in green waste for the production of peat replacement.

Importantly, the policy described in the paragraphs above simply applies to biotic raw materials. In other words, there must first be an assessment against the minimum standard and, in the absence of a minimum standard, an assessment against the waste hierarchy.

N.B.:
The CMP does not convey explicitly the terminology of cascading. However, the aim of 'keeping materials as much and often as possible in the chain' (see also the principle of [Section 3.1 'Principles']) is in line with the 'cascading in time' principle. The environmental gain from the recovery of secondary raw materials (cascading in function or in value) may also play a role in the definition of minimum standards.

3.4.6Other relevant waste management aspects

In addition to testing the minimum quality of processing techniques, the mixing of waste directly affects high-quality processing. The assessment framework for this has been elaborated in the [Waste Mixing Chapter] and in the 'Chain and Waste Plans'. Producers of waste are subject to the [section on keeping business waste and hazardous waste separate].

High-quality waste treatment also means ensuring that the environment of the processing plant is not unnecessarily polluted. Much of this is covered by legal and permit requirements for emissions to air, water and soil. But preventing pollution also involves reducing the dusting and drift of parts of the waste. When granting the environmental permit, it is possible to include provisions to keep the environment of the site where the waste is treated clean (Article 8.29 Bkl). If necessary, permits for waste operations are subject to instructions on how to keep the environment clean. In any case, this is always explicitly considered. In addition, in activities other than waste management, permit holders also look at the use of raw materials and the prevention of waste. See the [Raw materials use and waste prevention section].

In addition, cleaning up litter related to the activity is mandatory due to municipal rules. The temporary part of the Environment Plan (the 'dowry') states that in order to ensure the efficient management of waste, foodstuffs, packaging, sport or game materials, or other materials originating from the activity, must be removed as often as necessary within a radius of 25 metres from the boundaries of the site where the activity is carried out. The assessment framework for municipalities is set out in the [Decentralised rules chapter].

4. CMP assessment frameworks

1. The minimum standards in the CMP are the implementation of the waste hierarchy for specific wastes. If the CMP contains a minimum standard, the issuer of permits assesses it against the waste hierarchy rather than directly itself.
2. In cases where the CMP does not have a minimum standard, authorisation providers apply the waste hierarchy themselves as a review framework. In doing so, the issuer of permits assesses the level of the waste hierarchy that is technically and practically possible and permits for processing will not be granted according to a lower step in the waste hierarchy.
3. If a waste is covered by a waste or chain plan, the Human Environment and Transport Inspectorate (ILT) uses the assessment framework for import and export set out therein. If a waste is not covered by a waste or chain plan of the CMP, the ILT itself test on the basis of the waste hierarchy is whether the proposed treatment in the destination country is sufficiently high-quality.
4. All permits for activities involving waste explicitly consider including requirements for the clean-up of litter resulting from the relevant activity in the vicinity of the site where the activity is carried out.

Related assessment frameworks are also found in:

- the [Guidance on the use of minimum standard], and
- the [Guide to mLCA].

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

No developments are currently foreseen that could lead to changes in the review frameworks of this chapter.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

6. Resources and more information

The guidance for this chapter is given below:

- The [Guide to the use of minimum standard]
- The [Guide to mLCA]

Circular Materials Plan Design

Wood supply chain plan

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Wood supply chain plan

This chain plan provides companies and authorities with knowledge of the wood chain. In addition, the competent authority provides assessment frameworks for granting waste treatment permits and cross-border timber transportation.

Synopsis

The first part of the chain plan describes the wood policy and objectives. It also provides businesses and public authorities with guidance on the choices that can help make the chain circular. It provides information on which legislation is relevant and which authority supervises this matter. The focus points for assessing whether the material is, or must remain, legally a waste material are also included.

The second part of the chain plan contains the assessment frameworks for authorising the processing and cross-border transport of wood as waste. Competent authorities should take these assessment frameworks into account when making decisions. In addition, it provides an explanation of the assessment frameworks and additional information for taking decisions on the processing or cross-border transport of these wastes.

At the end, the future plans for this chain plan were described, both for the first part on the chain and for the assessment frameworks in the second part. For more information on the different chain and waste plans, please refer to [materials].

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2. Supply chain and chain parties overview
3. Circular economy choices
4. Draft
5. Manufacturing
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8. Waste or non-waste

Waste assessment frameworks

9. Defining assessment frameworks
10. Process quality assessment framework
11. Cross-border transport assessment framework
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13. How to prepare high-quality notes
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Future plans

Knowledge of the material chain

This chain plan is intended for parties in the wood chain. From wood production, design, production (with wood) and use to waste processing and re-use of materials in products. It is also aimed at policy-makers, permit providers and regulators along the chain, such as provinces, municipalities, ILT and environment services.

The chain plan describes the whole chain focused on wood that is used for technical purposes and released again after use. It is therefore about wood from which products are made. Therefore, timber production in the forest is included to describe the chain. This is woody biomass that we derive for technical needs from a local biological cycle. The main areas of application for wood are construction (residential and non-residential construction and infrastructure) and utility objects (furniture in particular). Wood packaging material (such as pallets) is also covered by this chain plan.

Wood is used indoors and outdoors. If wood is not used, life-extending measures, such as impregnation, are sometimes applied. Impregnated wood, often used in gardens (fences, garden houses), is also covered by this chain plan. Although the chain plan describes the chain, and thus also includes forestry, the chain plan does not deal with fresh wood and pruning waste, see the [Green Waste Plan]. Similarly, this chain plan does not cover primary wood used directly for energy generation or paper production (see the [Chain plan for paper and cardboard]).

This section first presents an overview of the main public policies and objectives for circularity of wood. This will be followed by an overview of the current chain and the key parties involved in the chain. It then explains what is meant by a circular chain and, for each chain stage, details the choices that chain parties can make in order to make the chain circular. It explains what legislation already applies and which authority monitors it. The last section will then explain the points of attention for the legal distinction between waste and non-waste in the wood chain.

1. Policy and objectives

A circular chain is established at the European and national levels. Several national and international frameworks set objectives that are directly or indirectly relevant to making the wood chain more sustainable or circular. This section sets out the main relevant policy programmes and (legal) objectives. More specific legislation is included in the chapters below.

1.1European Union Policy

In addition to the circular economy policy (EU action plans ‘make the circle’ and ‘for a cleaner and more competitive Europe’), European climate and anti-deforestation policies apply to the production and import of wood. In addition, the policy on the use of wood for energy is relevant, as it includes a preferred order for biomass.

1.1.1 EU Forest Strategy

The EU-Forest Strategyelaborates on the role that forests in Europe can play in achieving the goals set out in the European Green Deal. In the EU forest strategy, the European Commission announces actions to better protect and restore forests, strengthen sustainable forest management and increase forest area within the EU. These forest-related measures make an important contribution to the storage of CO_2, the protection and conservation of biodiversity and other ecosystem services, and the achievement of a CO_2-neutral, circular economy.

The main European legal frameworks on wood are the European Timber Regulation (EUTR). (Regulation (EU) No 995/2010) and the European Deforestation Regulation (EUDR) (Regulation (EU) 2023/1115). The legislation aims to combat climate change through deforestation and forest degradation.

1.1.2 Renewable Energy Directive (REDIII)

The Renewable Energy Directive (Directive (EU) 2023/2413) encourages Member States to take into account the cascading use of biomass. This cascading is very similar to the R-ladder and waste hierarchy. This focus is on new support schemes such as subsidies that should not disrupt the cascading use of biomass. The order of priority (Article 3) is as follows: a. (wood) products;

b. extension of the service life of (wood) products;
c. reuse;
d. recycling;
e. bioenergy, and
f. deletion.

Some exceptions where cascading does not apply have been identified. Examples include security of energy supply, biomass from necessary forest management activities, and biomass from natural damage, e.g. from storms.

1.2Dutch Government Policy

The circular economy policy for different product groups is relevant for the wood chain. In addition, the Sustainability Framework for Biobased Materials and its decision is relevant for the material stream of wood. Finally, legislation includes extended producer responsibility targets for reuse and recycling for wood.

1.2.1 National Circular Economy Programme (NPCE)

The National Circular Economy Programme (NPCE) sets out objectives and measures to ensure that the Netherlands is circular by 2050. The NPCE has specific effects for the building and furniture industry relevant to wood:

- Residential: As an impact target, the government aims to cut the environmental performance of new dwellings by 2030 by the next step[81]. As a result, there may be more demand for wood (new but also secondary) for the construction of homes.
- Offices: As an impact target, the government aims to achieve an environmental performance of new offices of 0.7 or lower by 2030 (compared to 1.0 in 2021). The impact objective set by the Cabinet encourages the progress of circular procurement and public procurement by the Central Government Real Estate Agency. As a result, there may be more demand for wood (new but also secondary) for the construction of offices.
- Furniture: the future picture for 2050 is that furniture meets the highest achievable circular product requirements, including recyclability, disassembly and use of recyclate. The life of furniture has been extended at most. Furniture is reused, repaired and refurbished, and at the end of its (long) life, materials are recycled to be used as a secondary raw material.

1.2.2 Sustainability framework for bio-based materials

The Cabinet wishes to ensure that the use of bio-based raw materials is responsible and diligent. The Sustainability Framework for Bio-Raw Materials is the starting point for the drafting of new policies aimed at the use of bio-raw materials and the legislation for the relevant sectors. This includes the preferred use of bio-raw materials in the building and energy sectors. The starting point is that only sustainable bio-raw materials can contribute to the transition towards a climate-neutral and circular economy and that sustainable bio-raw materials should ultimately be put to the highest quality possible.

The Decree on Conformity Assessment of Solid Biomass for Energy Applicationsand its associatedRegulation on Conformity Assessment of Solid Biomass for Energy Applicationsset out requirements that biomass must fulfil in order to be considered ‘sustainable’ (Article 2 of the scheme). In addition, this Decision allows for the establishment of a conformity assessment body (Chapter 2 of the Decision) to assess the certification schemes that meet these criteria (Article 17 of the Decision) and establishes a supervisor for this system.

guarantee (Article 19 of Decision). The sustainability criteria will apply to regulated and stimulated bio-based raw materials in the sectors covered by the Bio-based Raw Materials (Energy, Materials and Chemistry) Sustainability Framework.

The Dutch government is also exploring the scope for broadening the Sustainability Framework for raw materials from bio-based sources. After broadening, an integral trade-off between the different applications of sustainable renewable raw materials can be made. The cabinet also plans to map out how many bio-based raw materials are desired in the circular transition and how this relates to the availability of sustainable bio-based raw materials.

Since 2010, the public authorities have pursued a sourcing policy of demonstrably sustainably produced wood. The wood must meet the requirements of the Timber Procurement Assessment System (TPAS). Legislation on the use of biomass is under preparation. TPAS may expire when it comes into force.

1.2.3 Extended producer responsibility (EPR)

Extended producer responsibility (EPR) means that producers and importers are financially and often also organisationally responsible for the waste management of the products they place on the market. The ExtendedProducer Responsibility Decreelays down general obligations. In addition, additional legislation exists for specific products.

Packaging, including wood packaging such as boxes and pallets, is subject to an EPR. This is laid down in the Packaging Management Decree. In addition to the existing obligations for packaging, the cabinet is exploring the creation of EPR for furniture.

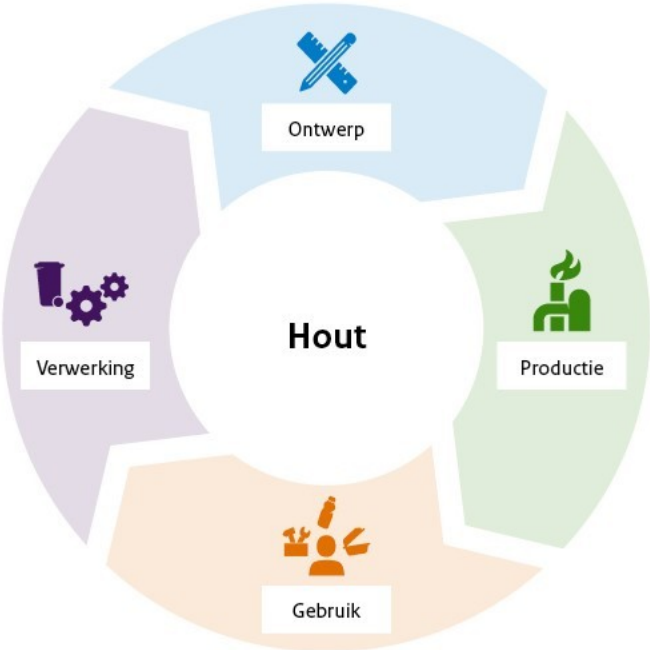
81The lower the environmental performance, expressed as environmental cost indicator (MKI), is the better.

The Packaging Management Decree sets targets for collection, reuse and recycling. For wooden packaging, the objectives are to reuse or recycle at least 55% (by weight) of the wood in the packaging and to recycle at least 30% (by weight).

2. Supply chain and chain parties overview

A chain consists of several stages: design, production, use and processing. This section provides an overview of the different chain stages for wood and the main chain parties involved. The texts provide examples of applications of wood in construction, in consumer articles and in packaging.

Figure 1: Design, production, use and processing chain stages



Draft

Wood is used in many different sectors, such as the construction and furniture industry. In the construction sector, clients and architects have a major influence on the use of wood in a construction, and thus on the use of wood. When using wood for products, such as furniture, it is the brands and retail companies that market these products and determine their design. Most of these companies are located outside the Netherlands.

Manufacturing

Wood is a biotic raw material. It is part of an ecosystem and can grow again and again under the right conditions. Wood is extracted from trees. Wood production mainly takes place in production forests spread around the world, with a relatively high proportion of wood originating from Scandinavia, the Amazon region and Asia. In the Netherlands, wood is considered sustainable if it meets certain criteria. See above [Section 1.2.2]. 'Bio-raw materials sustainability framework']. The felled trees are then further processed into raw materials (beams, planks, poles, but also board material such as particle board or plywood) for further production in the different wood applications. Construction wood is also made of recycled wood, for example, chipboard or '*cross laminated timber*' (CLT) products.

Wood can be processed in various ways. Examples include lacquers, paints, glues, impregnation and treatment with biocides. Many wooden items such as furniture and toys, decoration and consumables enter the Netherlands through imports from wholesalers.

Use

Wood purchasers can steer wood towards quality and sustainability, for example by requiring sustainability criteria to the origin of wood (such as the FSC and PEFC labels). This applies to both construction and consumer articles and wood packaging. The building or product is maintained by its users, consumers and businesses, which influence its useful life. Wood is released over time, for example in the renovation, renovation and demolition of buildings and constructions (including civil engineering) and replacement of utility objects. This stage will determine how high-quality wood can be reused.

Processing

Wooden items can be sent for reuse to thrift shops. Used wood from construction is increasingly sold on second-hand construction markets. There is an increasing number of initiatives that carefully remove wooden elements such as frames, doors, beams and floors when demolishing premises. These elements are sometimes used for re-use, either directly or after processing or repair. Wood is also recycled. Whole solid wood boards or beams, called volwoods, are offered to businesses or individuals. Sometimes by market players, sometimes by circular crafts centres. This form of recycling, continued cycling, is carried out on a modest scale.

If the wood is not recovered for reuse or continuous cycling in the way described above, the waste wood is recovered via more common waste management. Commercial waste collectors are responsible for the collection of waste wood. They collect the waste wood from, for example, demolition sites. Waste wood also reaches sorting companies through mixed construction and demolition waste containers. Here the waste wood is shredded and chipped.

Municipalities are also required to collect wood separately at collection points. Wood ends up in the wood container for A and B wood, in the container for C wood and in the container for bulky household waste. Class A wood is unpainted and untreated wood, Class B wood is painted, varnished and/or glued wood, and Class C wood is impregnated wood with substances of care.

About 25% of A and B wood is recycled into products such as particle board. This is mainly done in Belgium and Germany, and only at a minimum in the Netherlands. About 75% of A and B waste wood is incinerated in waste incineration plants (WIPs) or in biomass power plants (BECs). Class C wood is incinerated in waste incineration plants or landfilled at one of the Dutch landfills.

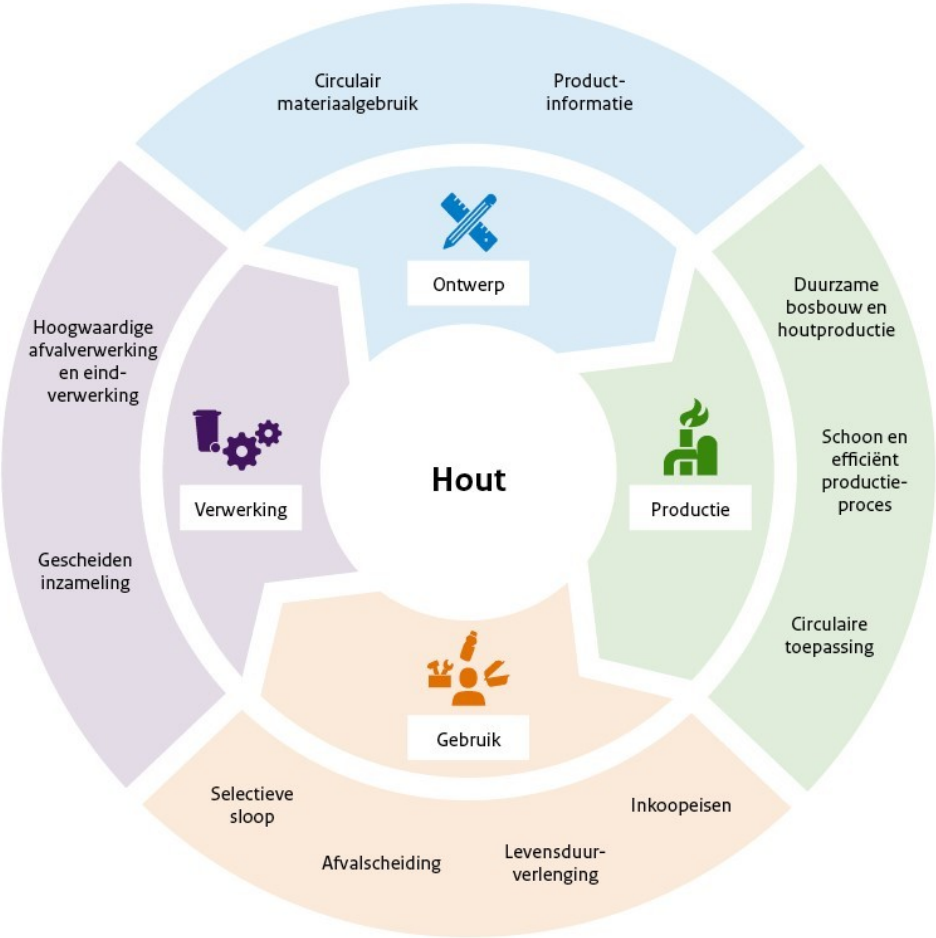
3. Circular economy choices

The National Circular Economy Programme (NPCE) indicates that the objective of the transition to a circular economy is to achieve economical and safe use of raw materials. The programme describes four steps to make resource use more circular:
reducing the use of raw materials, substituting raw materials with secondary raw materials and sustainable bio-raw materials or raw materials with a lower environmental impact, extending their lifetime and finally achieving high-quality processing.

In order to achieve a circular economy, each step must contribute and each chain party must adapt its circularity strategies. It is not just about good design or recycling. Each step in the chain influences a subsequent step. Circularity therefore covers the whole chain from design, production of raw materials, material and products, use including maintenance and repair to waste treatment, and high-quality application of recycled materials.

This includes circular design of wooden products. The focus is on how the wood and wood product can fulfil a high-quality function for as long as possible. Ideally, production involves the use of recycled or recycled wood, otherwise new, sustainably produced wood or wood released from local tree maintenance is used. The production of wood and wood products uses renewable energy and minimises waste. Wood and wood products are well maintained to remain functional for as long as possible. At the end of a service life, wood and wooden products are carefully collected, taking into account their different qualities. The wood recycling and reuse industry is organised in such a way that efforts are always made to keep waste wood intact and functional. Last place
offers recycling techniques that involve the shredding or shredding of wood. Only the residues of wood that has already been recycled are incinerated with energy recovery.

Figure 2. Choices in each chain stage

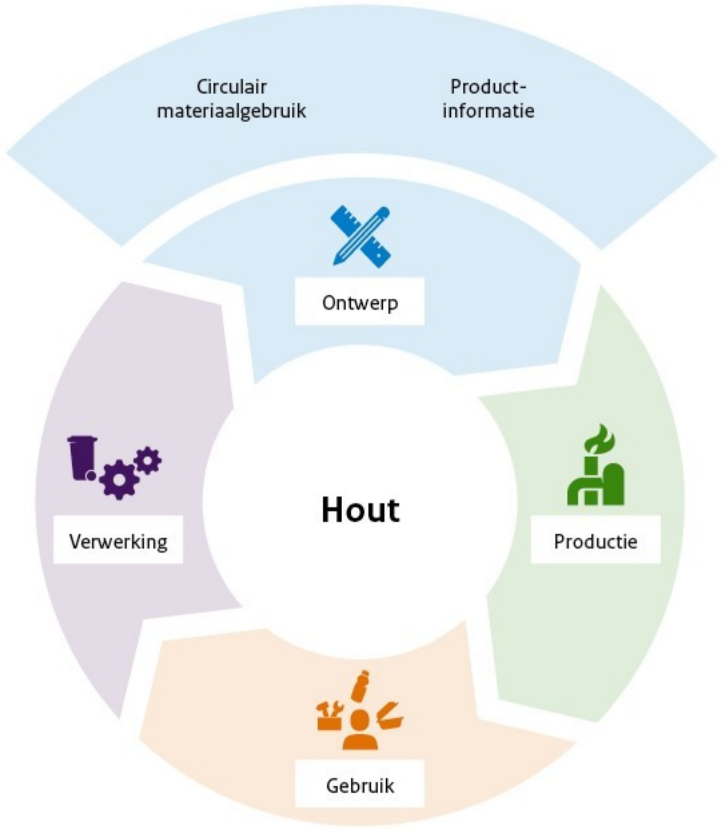


The following paragraphs explain, for each step, the choices that stakeholders can make in order to help create a circular economy, so that raw materials remain available and affordable. It explains the legislation that is relevant in this regard. Finally, attention is paid to when a material is legally waste or not.

4. Draft

Designers of wood and wood products play a very important role in the transition to a circular wood economy. In a circular economy, designers are in contact with other links in the chain, such as recyclers, to ensure that used timber can be used in new timber products.

Figure 3: Choices at the design stage



4.1Circular material use

Circular design creates and preserves value for a wood product throughout the entire chain. The design of a product or a construction work also plays a central role in keeping raw materials available. Long life and reuse are only possible if the product can be dismantled and/or repaired and replaced as broken components. High-quality wood recycling is more difficult when materials (in product components) are inextricably linked. [Circular material use chapter] sets out general design principles. These are presented below and, where possible, made specific to wood.

1. **Do not produce or buy anything that is not necessary**

When designing a wood product, it should always be necessary to consider whether wood is the right material to apply.

2. **Design and produce with less material**

In a circular economy, the manufacturer minimises the use of materials.

3. **Design and produce with (sustainably produced) renewable raw materials or with secondary raw materials**

If wood is needed, the availability of reusable wood is first assessed, then recycled full wood and finally recycled fibre products. The producer applies a quality assessment when using recycled wood. If reuse or recycling is not possible, new wood will be used from a sustainable source.

4. **Design and produce for optimal service life**

The products are made in a way that allows them to last for a long time and is easy to repair or upgrade. However, please note that life-extending agents can be substances of concern and ultimately can also complicate recycling. See also [Section 4.2 ‘Product information’].

5. **Design and produce for high-quality recycling**

Wood is applied in a circular economy in such a way as to be easily separated from other materials, unless the other materials do not adversely affect reuse or recycling. So, in all sectors, designers are thinking about how to easily separate the wood fraction from the product.

6. Design and produce for standardisation

Standardisation ensures that a product is as broadly applicable as possible and better prepared for combinations with other products and future uses. For example, building and interior construction already use standard sizes.

7. Design and produce for functional adaptability

Locking the components through detachable connections creates the possibility to make adjustments later on. In the case of wood, this means the use of screws, reversible glues, and smart fastening methods not requiring any addition (click, clamps).

8. Do not use healthcare substances

The Netherlands and Europe are committed to the transition to a non-toxic circular economy. That is, the application of care substances is limited to those necessary for the production or functionality of a product or beneficial to the life-cycle (reparability) of a product or to the quantities of raw materials required for a product and avoiding or minimising emissions of care substances at all stages of the product chain.
(production, use, recycling). For wood products, for example, a trade-off should be made as to whether the extension of the duration of use by adding agents (such as lacquers, paints, oils, and impregnating agents) outweighs the fact that the high-quality recycling of this treated wood is more challenging.

9. Use in production of circular auxiliaries and renewable energy

In addition to the wooden object or product, its production should preferably be circular. Consider minimising the release of sawmill residues and minimising the use of energy, water and machinery.

10. Maintain the value of products and raw materials as long as possible

The longer wood is valuable, the longer it is appreciated as such. By focusing on value preservation, wood will stay longer in the chain.

11. **Consider the waste management stage beforehand**

As a designer or producer, you should consider how the wooden product you are currently making can ultimately be used, reused and recycled to the highest quality.

For wood products, different product and substance legislation may apply.
For general care substances, the REACH Chemicals Regulation (Regulation (EC) No 1907/2006) and the POP Regulation for persistent organic pollutants (Regulation (EU) 2019/1021) are relevant. More information on the legislation governing substances of concern can be found in the [Chapter on SVHCs and other substances of concern]. [Section 13.3 'Substances of very high concern (SVHCs) and other substances of concern'] of this chain plan refers to substances of concern in wood waste.

For packaging and wood products such as cutlery and crockery, the European General Product Safety Regulation (Regulation (EU) 2023/988) and the Netherlands Commodities Actis important. The Food Contact Materials Regulation (EC Regulation) 1935/2004), the Dutch Commodities Act Decree on packaging and consumer productsand the Commodities Act Regulation on packaging and consumer productsrelevant. The proposal for thePackaging and Packaging Waste Regulationallows the European Commission to set draft requirements for the recyclability of packaging.

For furniture, based on the Ecodesign for Sustainable Products (ESPR) Regulation (Regulation (EU) 2024/1781), design requirements are envisaged, for example for reparability and recyclability. For wooden building materials, the proposal for theConstruction Products Regulation(in English CPR) is relevant. On this basis, requirements are set for circularity of construction products. For the design of construction works with wood, the requirements in the Environmental Structures Decreefor the environmental performance of buildings (MPG) also apply (see also [section 4.2 'Product information']). The [legislative overview chapter] provides more guidance on legislation that is relevant for product design.

4.2Product information

In a circular economy, the producer delivers the product with a calculated environmental impact and prepares a product passport. This applies to all products. In construction, the environmental impact score is already displayed in a product fiche in the National Environmental Database. These are used for the calculation of the Environmental Performance of Buildings (MPG). For the design of a building, the calculation of the MPG is mandatory in the Living Environment Law (Structures) Decreefor obtaining a building permit. The maximum permitted score is periodically increased downwards by the Ministry of Interior. The Municipality supervises the MPG when it issues building permits.

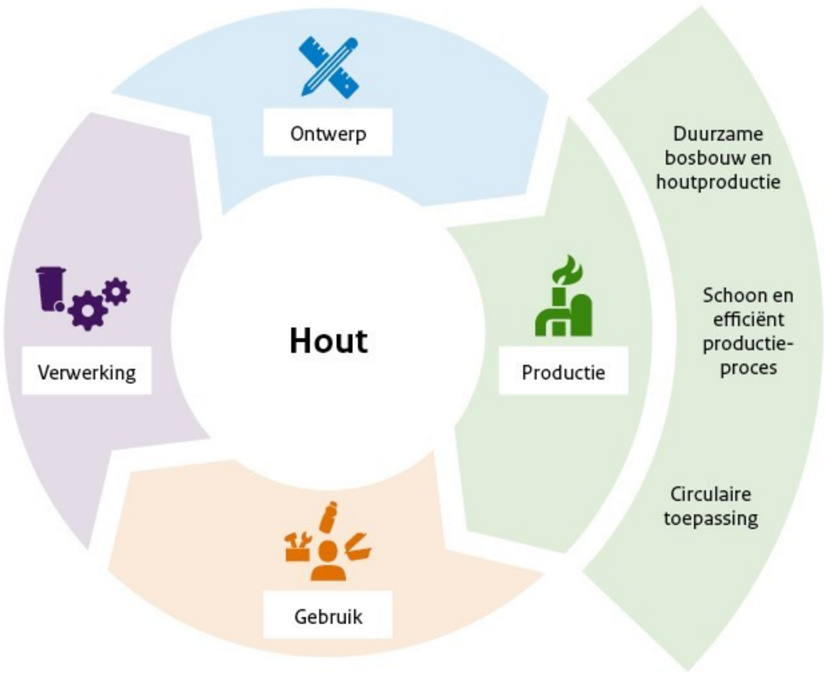
The ESPR will set requirements on the product information for furniture and other products. This includes carbon footprint and information on critical materials, chemicals of concern, repair, and recyclability. The ESPRrequires a Digital Product Passport (DPP) for all product groups over time. The ILT monitors the implementation of this legislation.

5. Manufacturing

We distinguish between two levels: wood producers and wood products producers – including packaging or construction works. Wood producers are essentially foresters and logging companies, producing wood. They are primarily responsible for sustainable forest management, taking into account the local, natural ecosystem. Wood products and construction works producers manufacture wood. They are architects, builders, furniture companies and all kinds of other companies that market wooden products. They are asked to handle timber as carefully as possible. The
design principles under [Section 4.1 'Circular use of materials'] are the main starting point for them.

4: Production Phase Choices

Figure



5.1 Sustainable forestry and timber production

In the circular economy, new wood used in the Netherlands comes from forests that are sustainably managed, or local wood that is not forest but is released in, for example, maintenance work. In the first case, wood from a forest means that it meets the sustainability criteria (see [section 1.2.2 'Sustainability framework for biofuels']). In the second case, the local wood generated by the maintenance of trees, projects such as road works or calamities such as noise. Wood that is released locally is generally not accompanied by sustainability certificates.

For sustainable forest management and timber harvesting, there are certification schemes where a piece of wood can be traced back to the forest it was found in through a *Chain of Custody* (CoC). Material loss and therefore loss of value is minimised. Finally, the logs are offered as complete and material as possible.

Wood must be produced in line with the European Wood Regulation (EUTR) (Regulation (EU)No 995/2010) and the European Deforestation Regulation (EUDR) (Regulation (EU) 2023/1115). The NVWA monitors these rules. The Decree on Conformity Assessment of Solid Biomassfor Energy Applicationsand its associatedRegulation on Conformity Assessment of SolidBiomass for Energy Applicationslay down criteria that biomass must meet in order to be considered 'sustainable' (Article 2 of the scheme). In addition, this Decision allows for the establishment of a conformity assessment body (Chapter 2 of the Decision) to check which certification schemes comply with these criteria (Article 17 of the Decision) and establishes a supervisor to ensure this system (Article 19 of the Decision).

5.2 Clean and efficient production process

Producers make choices in their production process that affect the local environment and the use of raw materials and the generation of waste from the company. In a circular production process, the manufacturer avoids cutting, cutting and waste of energy, water, materials and packaging. This is important for the design of new production lines and for the adaptation of production. During production, the manufacturer monitors the incoming raw materials, production, emissions and waste. On this basis, measures are taken to prevent and mitigate environmental impacts locally and in the chain. Inevitably, wood production waste is often returned directly to the production process. For example, smaller pieces of wood are simply reused whenever possible.

In the Netherlands, production processes are subject to general rules and permit requirements under the Living Environment Law (Activities) Decree(Bal). It depends on the activities that are carried out by a company in the wood processing industry. If applicable, the permit issuer also assesses the use of resources and waste prevention during the permit. More information can be found in the [Raw materials use and waste prevention section]. Authorisation, supervision and enforcement are carried out by environmental services on behalf of provinces and municipalities.

If the company uses residues, by-products, used products or waste, it is necessary to answer the question whether a material is legally a waste or not. This is because waste operations are subject to specific rules or require a permit. The basis for this assessment is provided by the EU Waste Framework Directive (Directive 2008/98/EC) and it has been implemented in the Netherlands in the Environmental Management Act and elaborated in the CMP in the [chapter on waste or non-waste] and its guidance.

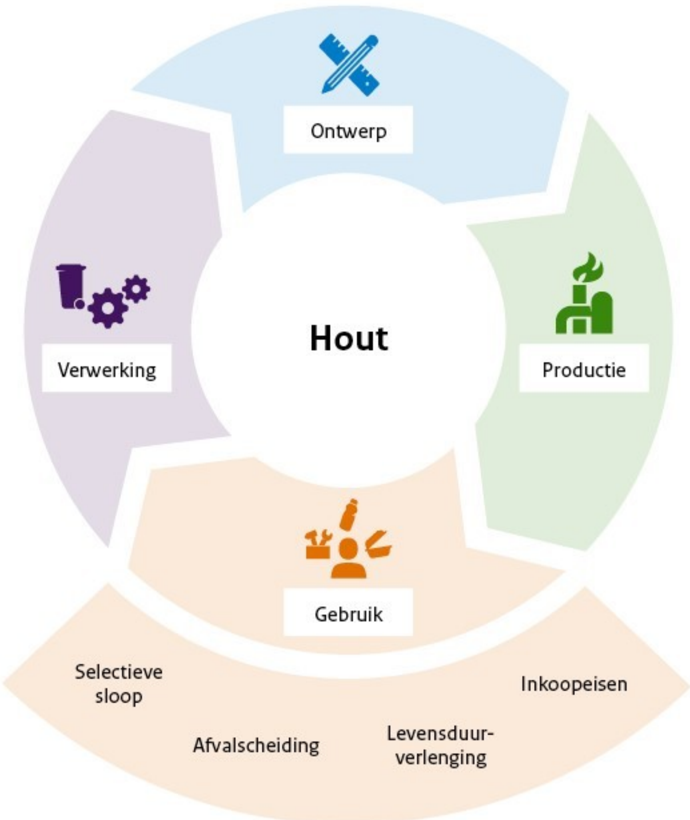
5.3 Circular application

In a circular economy, raw materials and products, including wood, are offered and applied for value preservation, long life and cycle closure. Producers of wood and wood products follow the draft rules set out in [Section 4.1 'Circular use of materials'], which largely follow the R strategies.

6. Use

Product users have an important strategic asset: as a buyer, they can first choose between a product made from fossil raw materials and a wooden product, which also has a sustainable origin. Using wood and wood products for as long as possible is also something that the user himself can take care of. This can be done by taking care of and maintaining it well. Finally, it is up to the user to ensure that wood and wooden products are properly sent separately to waste collectors.

5: Use-phase choices



6.1 Purchase of wood or (partly) wood products

The sourcing moment is strategically interesting because the client can impose requirements on the vendor and/or the deliverables. In some cases, this is more obvious and promising than in others. The R-ladder and its principles for a designer ([section 4.1 'circular use of materials']) are guiding: a product

Figure

that meets these criteria is preferable to products that do not. For certain product groups, such as office furniture, this has been included in MVI procurement criteria.

6.2 Life extension

In a circular economy, the user ensures that wood and wood products remain functional for a long time. Patient growth through long-term CO_2 uptake makes wood a valuable natural product. By caring for wooden items, wood also retains a long value. Examples include vintage wooden furniture. In construction, wood can also function for a very long time. For example, in canal buildings or castle farms you can find bars that are 400 years old.

Repair, maintenance or redesign may sometimes be necessary, and wood is well suited to do so. Lacquers and oils protect the wood, extending its lifespan. These so-called 'preserving agents' can make recycling more difficult. However, in general life extensions are preferable to recycling[82], so sustainability is recommended. In a circular economy, this is done as much as possible without the addition of resources, for example by drying or burning techniques.

Repair and reuse are subject to rules in the Living Environment Law (Activities) Decree(Bal). The legal nature of a waste or non-waste may also be relevant. The [Repair and reuse chapter] further explains the structure of the legislation and the

offers possibilities for repair and (preparation for) re-use. Here again, environment services supervise these activities on behalf of municipalities and provinces.

6.3Waste separation

In a circular economy, wood is segregated in a way that maximises reuse and recycling. In addition to the separation of A and B wood (which may now be mixed), C wood and wood packaging, a circular economy also separates them by quality and size. Quality will determine the potential for reuse, recycling or lower-grade processing. Quality separation may also mean that A and B wood should no longer be mixed in a circular economy. Size separation is also an obvious choice in the circular economy. The more wood is, the more recycling options are possible.

For household waste, it is now mandatory for municipalities to ensure that wood is separated into several categories: A/B wood and C wood. For business waste, all companies now have to separate wood from 3m2. See [hoofdsteak gescheidenn bedrijfsafval en gevaarlijke afval]. For CDW, although it is not compulsory to keep separate from wood waste, it is desirable, see [Section on keeping waste separate for business and hazardous waste] and [AFvalplan mixed CDW]. For packaging, an EPR (extended producer responsibility) has been closed. Wood packaging, including pallets, is also included. The EPR provides that the producer is responsible for the collection of wooden packaging.

6.4Selective demolition

The final location is lucrative. In a circular economy, the slacker is taking stock of valuable wood fractions that need to be dismantled carefully before starting rough handling. The slacker has a plan and a network to make money out of these valuable flows. This includes clients. Criteria are available and certificates can be obtained. Wooden beams, floors, frames, doors and other wood are kept separate and sold. The slacker keeps track of the material flows extracted and where they go. The yield of used quality wood exceeds the cost of selective demolition.

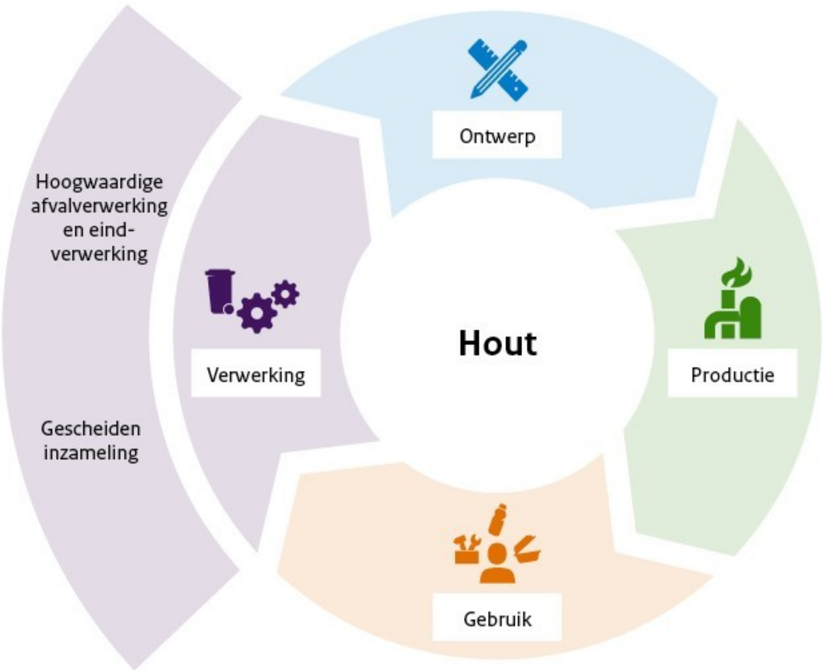
The rules for demolishing buildings are set out in the Living Environment Law (Structures) Decree(BBL).
This includes requirements for the inventory of asbestos and the separation of demolition waste. Different standards of safe and environmental demolition as well as circular demolition are used to tender for demolition works. These can be found in the MVIcriteriafor socially responsible government procurement.

82 https://cedelft.eu/wp-content/uploads/sites/2/2022/10/CE_Delft_210250_Veoperations routes_van_afvalhout_Def.pdf

7. Processing

The role of waste collectors and processors in the circular economy is to ensure the highest quality processing of wood and wood products. For this reason, the collector will keep the different qualities separate from each other. In the circular economy, processors have a wide range of offerings ranging from (preparing for) reuse, recycling at different levels, to incineration. Finally, waste collectors and processors in the circular economy have an important communication role. They experience the ease or difficulty of getting something circular again, and can provide feedback to product designers, producers or users.

6: Processing stage choices



7.1 Separate collection

In a circular economy, the role of the collector is to ensure the best possible separation of different types and qualities of wood. It is separated on A, B, C wood and wooden packaging, but also, for example, on size and quality (see [Section 6.3 'on waste separation']).

The collector has a network of processors where the different flows can go. The yield of good quality wood encourages the collector to use this quality sorting technique. In a circular economy, wood crushing is only applied to wood that is recycled into wood fibre products, for chemical recycling options such as pyrolysis, or when it is incinerated because it cannot be recycled.

For wood packaging, producers and importers have financial and organisational responsibility for the collection and processing under the EPR (see [section 1.2.3 'Extended producer responsibility']). In addition, for all wood waste, collectors are required under Article 1bWaste Collection Decree(Bia) to keep separate different categories of waste that are delivered separately. The mixing of different types of waste often requires a permit. This is set out in the Living Environment Law (Activities) Decree(Bal). More guidance on when a permit is required and how it is assessed by the competent authority is provided in the [Waste Mixing Chapter].

7.2 Waste management and final treatment

In a circular economy, the waste handler has good knowledge of wood quality. This enables the processor to develop an offer covering several steps in the waste hierarchy. With the highest R-strategy in the circular economy, he also works best to process wood at the highest possible quality. Full wood can be recycled and marketed, possibly after processing (de-inking, sawing, planing, *cross* lamination, finger welding). Sheet material that can be used again as sheet material is also marketed in a circular economy as a sheet material.

Figure

The value cascading in a circular wood economy is as follows: If the quality of the whole wood is no longer sufficient to be marketed as a full wood, then:

- Goes to processing for the production of composite wood products, such as sheet material.
- Composite wood products that can no longer be recycled as composite wood products move towards chemical recycling or fibre extraction.
- If the above is not possible, the wood is incinerated with energy recovery. Wood can be composted if it is certain that it is pure A wood.

Companies that collect and process wood waste must comply with the rules in the Living Environment Decreeactivities(Bal). Certain activities involving wood waste or the use of wood as biomass to generate energy require an environmental permit. These include emissions, acceptance and administrative checks and controls, high-quality processing and mixing of waste. In order to obtain a licence, the processing technique must be assessed against the [high-quality processing assessment frameworks]. Authorisation, supervision and enforcement are carried out by environmental services on behalf of municipalities and provinces.

8. Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term 'waste' should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to carry out this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the [Guide on waste or non-waste].

For wood, here is a number of specific points for attention in the assessment of waste or non-waste. These points do not describe the full assessment framework.

Reuse

In order to determine whether there is reuse or waste, it is important to establish the intention of the holder with the wood. If a holder discards, wants to discard, or has to discard, it is a waste. For example, when a private individual sells wooden furniture for the purpose of giving it a second life, it is re-used and is not a waste. Offering wooden furniture to a thrift store may also mean that it is reused. However, it must be the case that the shop checks the suitability for re-use of the furniture when it receives the furniture and only takes up the furniture that is suitable for that purpose. In addition, there must be a high degree of certainty that these items of furniture can be sold again. The explanation above also applies to other wooden products, for example wooden toys. The assessment of whether a material is waste or non-waste will require a case-by-case assessment of the waste status of the material, based on all the facts and circumstances of that case.

End-of-waste

The submission of wooden material by a holder to the waste collection point is an indication of desire for and waste. An increasing number of municipalities are investigating the possibility of re-use of materials at collection points. Forms of collaboration are also being developed between waste collection centres, thrift shops and others under the umbrella of circular craftsmanship centres. In these cases, an assessment is made of whether something is suitable for reuse or recycling within the Circular Craft Centre, or whether it should be in a waste container for off-site processing. After preparation for reuse or recycling has been completed, the conditions set out in Article 1.1(6) Environmental Management Act(WM) and [Chapter on waste or non-waste] allow an assessment of whether end-of-waste exists, based on all the facts and circumstances of the case.

Wood that is released during the demolition of real estate and infrastructure/civil works is almost always waste. It is only if the location of the reuse of the wood is already known by the holder during the demolition contract, and the wood does not need to undergo further processing that it may not be waste. The timber may be re-used in the demolition chain. Ideally, this assessment should be done as early as possible, before scrapping. If it is clear that wooden beams or a wooden floor can still be reused or recycled, the process will be demolished more carefully. If this step is not taken by the demolition waste collector, the construction and demolition waste collector may also carry out this assessment. After preparing for
reuse, or recycling may be completed, in accordance with the conditions set out in Article 1.1(6) WM and [chapter on waste or non-waste], an assessment of the existence of end-of-waste may be made, based on all the facts and circumstances of the case.

Non-waste on the market

In all cases, when wood is placed on the market as non-waste (either directly or after recovery or not), it must comply as a minimum with the applicable product regulations. These include REACH, the POP Regulation and the requirements arising from the Commodities Act.

Waste assessment frameworks

This section of the plan describes how businesses should process waste wood and what the focus is on it. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). When making decisions, competent authorities should take into account the CMP and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This permission is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this is written primarily for waste management companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

9. Defining assessment frameworks

Wood waste is diverse in origin. All wood waste, except fresh and pruned wood, falls within the scope of this chain plan. This may include, for example, discarded garden wood, wood residues, wood waste including sawdust and wood chips from wood processing, mixed waste sorted out wood or wood kept separate at source (for example, demolition activities).

In this chain plan, the assessment framework distinguishes between the following wastes:

Waste	Explanatory Note
Class A and Class B wood	A-wood is unpainted and untreated wood. Class B wood is painted, varnished and/or glued wood, other than Class A or Class C wood
C wood	Class C wood is impregnated wood. This is wood into which substances have been injected, whether or not under pressure, in order to extend its useful life. Two types can be distinguished: • Wood treated with CC and/or CCA salts; CCA wood contains arsenic in addition to copper and chromium; CC wood contains copper and chromium but no arsenic. • Wood treated with substances other than CC and/or CCA salts: - creosoted wood (treated with hydrocarbons and tars), e.g. railway sleepers, - wood treated with other substances (fungicides, insecticides, compounds containing boron, quaternary ammonia compounds) to extend its useful life.
Wood packaging	Wood packaging (including transport pallets) is mostly A wood and is covered by this chain plan for processing.

A detailed explanation of the scope is provided in [paragraph 12]. Part of this is an overview of waste similar to the waste in this waste plan, but covered by other waste or chain plans.

10. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The paragraphs below address the following aspects that are relevant when authorising the processing of wood waste:

- mixing permission (10.1)
- minimum standard (10.2)

10.1Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check whether mixing requires a permit.

10.1.1 The waste categories

The waste categories listed in Annex II of the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
19	Nga	Non-impregnated wood (A and B wood), except for wooden packaging	Non-impregnated building and construction wood, furniture, other wooden utensils (ladles), wooden toys. Non-impregnated garden wood: (tropical) (hard) wood such as azobe, teak, chestnut, douglas.
20	Nga	Non-impregnated wooden packaging	Pallets, crates, (wine and fruit) boxes.
21	GA	Wood that has been treated to extend its useful life using agents that contain copper and chromium (CC wood) or copper, chromium and arsenic (CCA wood). (impregnated C wood)	The following category of C wood falls into this category: impregnated garden wood, for example, fire or pine. Wolmanisation is a brand-name term, in which the explanation of wolmanisation no longer fits the current recipe of that brand. Therefore, the term 'wolmanised Chout' has become obsolete in relation to this waste.
112A	GA	Other hazardous waste that may not be disposed of in a landfill in accordance with the Landfills and Waste Dumping Prohibitions Decree or a minimum standard of circular Materials Plan	The following C wood falls into this category: • creosoted wood (treated with hydrocarbons and tars). • wood treated with other substances (fungicides, insecticides, compounds containing boron, quaternary ammonia compounds) to extend its useful life.

*ga = hazardous waste; NGA = non-hazardous waste

The legal rules on how these companies should keep their waste separate are set out in [Section 13.1 'Keeping waste separate and mixing'].

10.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks. This plan contains the following specific provisions for wood, which the Authority must take into account in derogation from the general assessment frameworks:

Cat. Bal	Allowing mixing in relation to the waste categories
112A	By way of derogation from the [Waste Mixing Chapter], for mixing C-wood impregnated with other than CC and/or CCA salts within waste category 112A or with waste category 112B, the Authority may only grant a permit if: • The C wood is used as a fuel (in the form of other recovery); or • the creosoted wood is recycled as far as possible under the REACH Regulation.

[Section 13.1.2 'Explanatory notes on waste mixing'] explains what the mixing policy means specifically for allowing waste wood mixing.

10.2Minimum standard

The processing of waste wood must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the processing of waste wood:

Flow section	Waste	Minimum standard
a	Class A and Class B wood	Other recovery.
b	Wood packaging	Recycling.
c	C wood treated with C salts other than CC and/or CCA salts	Other recovery in the form of 'primary use as fuel'. Other forms of recovery are not permitted, except for creosoted wood recycling where possible under the REACH-Regulation.
d	Wood treated with CC and/or CCA salts	Deposit at a suitable landfill. Higher quality processing is expressly prohibited in order to prevent the diffuse dispersion of heavy metals into the environment, unless: • 'Primary use as fuel' or 'Incineration (as a form of disposal)' refers to plants where the resulting residues (ash) are landfilled so that the metal cannot spread. • the recycling of CCA wood, to the extent possible under the REACH Regulation.

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 13.2 'Explanation of the minimum standard'].

11. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the related procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this chain plan, the above has been developed into a specific assessment framework for assessing whether the transfer of timber is permitted. If this specific assessment framework differs from the provisions of the cross-border section, the assessment framework of this chain plan is proposed.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [Section 13.3 'SVHCs and other substances of concern'] of this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of SVHC-containing waste and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Scope of the assessment framework, grounds and conditions for objection

The following assessment framework applies to all wood fractions as indicated in [the minimum standard] of this chain plan. Where necessary, the framework for reviewing certain political groups points separately, as there are different provisions or conditions governing them.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly, see [Section 3.3.1. 'prohibitions'] of the 'cross-border transport' section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for reuse	If the degree of recovery does not justify the shipment. Wood that has not been treated with agents that contain copper and chromium (CC wood) or copper, chromium and arsenic (CCAwood) is subject to excessive dumping (grounds for objection 12(1)(b) and 12(1)(g) EVOA)).
(Interim recovery followed by) recycling and other recovery for component streams a, c and d	If the degree of recovery does not justify the shipment. In the case of wood not treated with agents that contain copper and chromium (CC wood) or copper, chromium and arsenic (CCAwood), any landfilling is in principle too high. By way of derogation from the foregoing, shipment from the Netherlands of CCA wood for recycling/other recovery is only allowed as long as the intended form is:
	processing is authorised under the REACH Regulation (grounds for objection 12(1)(b) and (i) EVOA (Article 12(1)(g) EVOA)).
(Interim recovery followed by) recycling for component stream b	If the degree of recovery does not justify the shipment. In the case of wooden packaging, any landfilling or other disposal is too much (grounds for objection 12(1)(b) and (i) EVOA (Article 12(1)(g) EVOA)).
Other recovery for component stream b	Due to the possibility of higher quality processing in the form of recycling (objection ground Article 12(1)(a), (b) and/or (n) EVOA) (Article 12(1)(a)) and in case of transfer to The Netherlands Article 12(1)(k) EVOA).

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
All forms of (preliminary) disposal except landfilling for component flows a, b and c	This is because higher-quality processing in the form of recovery is possible (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
Incineration (as a form of disposal) for component stream d	Unless the resulting residues (ash) are dumped to prevent the spread of metals.

Other forms of (preliminary) disposal other than incineration (as a form of disposal) or dumping for component stream d	If the processing results in a fraction being landfilled due to national self-sufficiency; and in the case of transfer to the Netherlands due to national legal provisions if a part is landfilled (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (objection ground Article 11(1)(a) and (b) EVOA)).
Landfill	Because of the higher quality processing possible, and/or • under national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory notes and additional information

This part of the plan provides guidance on the assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport.

12. Explanatory notes on the scope

This plan concerns waste wood. In principle, this chain plan includes all parties of waste wood except pruning waste.

Waste wood is released during building, renovation and demolition of buildings and constructions (including civil engineering). Another large source of wood waste is the household and commercial waste stream containing objects made from or containing wood. A key wood waste source within this is furniture. Another important source of waste wood is the wood packaging, including wooden pallets and boxes. Waste wood can be released as a mono-stream when sorting mixed waste or as source-segregated stream. This chain plan includes both separately collected or separately delivered wood waste and wood originating from separation and sorting. Wood waste, including sawdust, shavings and chips from wood processing (sawmills, furniture-making plants, etc.) is also covered by this chain plan.

Wolmanised C wood is referred to in the waste categories of the Bal . Wolmanising refers to wolmansalts, which is based on a registered trade mark. Therefore, the term in the CMP is no longer used as a term for impregnated wood.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Mixed bulky household waste	[Residual waste plan]
Non-separately collected residual waste from trade, services and public authorities	[Residual waste plan]
Pruning waste	[Green waste waste plan]
Non-separately collected waste from public areas	[Waste plan for public spaces]
Mixed construction and demolition waste	[Mixed Construction and Demolition Waste Plan]

EURAL codes related to this plan (indicative)

The following EURAL codes may concern waste within the scope of this chain plan: 030104*; 030105; 030301; 150103; 170201; 170204*; 191206*; 191207; 200137*; 200138.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only paragraph 1 of this chain plan defines what is covered by this plan and not this list of EURAL codes.

13. How to prepare high-quality notes

13.1Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental Activities Decree (Bal) form the basis for the rules on keeping waste separate. [Section 10.1 'Mixing of waste'] sets out the assessment framework for allowing the mixing of wood waste. In the case of 'mixing', please see [Section 4.1 'Definition of mixing'] of the 'waste mixing' chapter.

13.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep wood waste separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	At construction and demolition sites there is no legal requirement to keep waste wood separate and separate from waste wood that is released during the actual performance of construction and demolition work on construction works (*Articles 7.24, 7.25 and 7.26 Living Environment Law (Structures) Decree*).
Keeping industrial waste and hazardous waste separate *(general)*	Companies must always keep C wood (cat.21), A and B wood (cat.19) and wooden packaging (cat.20) separate and dispose of them separately, unless they have a mixing permit (*Articles 3.195, 3.196 Bal and 'mixing of waste'* chapter). If a company stores larger quantities of A and B wood (cat.19) or wooden packs (cat.20), the company must also keep this wood separate from other wood of the same category and from non-waste, unless the mixing permit is granted (*Articles 3.195 and 3.196 Baland 'mixing of waste' chapter*). Article 3.185 Bal specifies the storage quantities involved. [Mixing of waste chapter] of the CMP and [Section 10.1 'Mixing of waste'] of this chain plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	The following rules apply only to 'disposers' before the waste has been collected or delivered. They also apply only to disposers who store, mix, bulge, separate, repackage and/or compact the waste exclusively. These rules differ from the rules on keeping them separate in general. Businesses must keep Class A and Class B wood (cat.19) and wood packaging (cat.20) separate and dispose of them separately if required by the CMP (Article 3.39 Bal). [Keep business waste and hazardous waste separate] states when this is the case. Class C wood is hazardous waste. Companies must always keep C wood separate and dispose of it separately by waste category (*Article 3.39 Bal*). A company that still wants to mix wood waste to be kept separately with other waste needs a licence. [Mixing of waste chapter] of the CMP and [Section 10.1 'Mixing of waste'] of this chain plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep wood waste delivered separately separated by waste category (Article 1b). Waste Collection Decree).

Recycling centre	Both non-impregnated wood (A and B wood) and impregnated wood (C wood) are two of the 18 waste substances for which the waste collection site must have a storage facility or make it known to private individuals when it does not take up the waste itself (*Article 4.623* *Bal*). For non-impregnated wood (A-wood and B-wood), the competent authority may issue a specific requirement permitting the collection point not to have a separate collection facility, but to be stored as a smart mixture. Conditions include that it is impossible to have a separate facility for all 18 wastes and that the same level of waste separation is achieved through post-separation or other measures. In any case, this waste wood must not be mixed with the waste container. See [chapter on separate collection of household waste]. [Chapter on separate collection of household waste] specifically addresses separation at the collection point.
Municipal collection *(household waste)*	Municipalities are not required to collect wood waste separately from households.

13.1.2 Explanatory notes on waste mixing

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations, such as:

- [Section 4.2.2 'Mixing of hazardous waste'];
- [Section 4.2.4 'Mixing of POP-containing waste'] and/or [Section 4.2.3 'Mixing of waste containing PBT or vPvB substances or substances of 'equivalent care'].
- [Section 4.2.5 'Mixing prior to or during landfilling'].

Always check whether these apply to the mixing of wood waste for all the assessment frameworks in the chapter.

The essence of allowing the mixing of wood waste is that it should be possible to continue processing in accordance with the minimum standard after mixing. This means:

- By way of derogation from the [mixing of waste], the Authority may only authorise the mixing of C wood impregnated with CC and/or CCA salts, other than within waste category 112A or with waste category 112B, if the C wood:
  - is undertaken with a primary use as fuel (as a form of other recovery); or
  - the creosoted wood is recycled to the extent possible under the REACHRegulation.
- For mixing wood packaging waste (waste category 20) with A or B wood (waste category 19), the Authority can only grant a permit if the processing operation is recycling.
- The Authority can only authorise the mixing of wood treated with CC and/or CCA salts (waste category 21) with other wastes for incineration, if incineration residues (ash) are landfilled, so that no metal dispersion can occur.

13.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard referred to in paragraph 10.

Waste hierarchy	Summary
Reuse (as a form of prevention)	Reuse does not imply waste treatment. [Section 8.1 'Waste or non-waste'] describes the possibilities for reuse if they are known.
Preparing forre-use	Allowed for Class A and Class B wood and for wood packaging.
Recycling	Recycling is the minimum standard for wood packaging. Recycling is permitted for A and B wood and, subject to certain conditions, also for certain C wood types.

Other usefulapplication	Other recovery is the minimum standard for A- and B-wood. For wood treated with CC and/or CCA salts, other recovery is only allowed under strict conditions. Specific primary use as fuel (as a form of recovery) is the minimum standard for wood treated with substances other than CC and/or CCA salts. Other forms of recovery of this wood are not permitted for the most common types of this wood.
Incineration (as a formof disposal)	Incineration (as a form of disposal) is only permitted and under certain conditions for wood treated with CC and/or CCA salts.
Landfill	Dumping is the minimum standard for wood that has been treated with CC and/or CCA salts.

13.2.1 Preparing for reuse

The competent authority may authorise the processing of A and B waste wood and wood packaging resulting in reuse, as this processing meets the minimum standard.

In practice, this is already the case in construction. Wooden elements such as doors, frames, windows and floors that are suitable for reuse for the same purpose after small treatment and inspection are removed from premises. Preparation for re-use is also common for packaging materials such as pallets. Discarded wooden furniture is also regularly prepared for reuse.

13.2.2 Recycling

Class A and Class B wood

Recycling of A-wood, B-wood and wood packaging is technically possible and already has many applications. However, because of insufficient recycling capacity, the minimum standard for A- and B-wood (other than packaging) is ‘other recovery (e.g. primary use as fuel)’. However, for wood packaging, including crates and pallets, the minimum standard does require recycling and thus the entire content is mandatory.

About 75% of all A and B wood are currently incinerated with energy recovery (form of other recovery), while wood cycling has many environmental benefits. The main reason for not raising the minimum standard for A- and B-wood is currently in progress, as there are too few companies that can recycle wood.

Recycling of A-wood and B-wood is common. About 25% (excluding packaging) are currently recycled. In particular, wood is recycled into sheet material for construction and furniture. Most of this happens abroad. Growth potential exists, partly in the current market: more products can be made from recycled wood. In addition, both Biobased and recycled materials may have an environmental advantage over non-Biobased materials.

The vast majority of wood recycling consists of shredding and removing waste wood, followed by sheet material from presses. However, shredding and removing chips also remove certain intrinsic qualities of the wood. Wood recycling is preferred, with minimum wood reduction. Many initiatives have already been launched to demonstrate that these forms of recycling are possible.

Supply of good quality waste wood, high-quality processing capacity and sales market are linked.

C wood

Recycling of C wood is only permitted for creosoted or CCA wood provided that the application complies with theREACH-Regulation.

13.2.3 Other recovery

This is currently the minimum standard for A- and B-wood. This means that all forms of recovery are also permitted ‘primary use as fuel’.

For C wood treated by means other than CC and/or CCA salts, the minimum standard is a specific form of ‘other recovery’ i.e. ‘primary use as fuel’. This means that other forms of recovery are in principle not allowed unless they are creosoted wood. For creosoted wood, the REACHRegulationprovides that it may be applied under certain conditions. Only this application is therefore permitted under the minimum standard (see the previous section).

Incineration of non-collected or delivered waste wood

In many businesses, their own clean waste wood is incinerated in a combustion plant, such as a wood-burning stove for space heating. As a result, the company is performing a waste processing activity. For the permit requirement, it is the waste wood that is incinerated and the power of the combustion plant that matters. Other business areas may also be affected.

In any case, the incineration of wood packaging waste is subject to permit requirements (Article 3.40e(2) Bal). In assessing a licence application, this chain plan is the assessment framework. Therefore, according to the minimum standards of this chain plan, wood burned at the site cannot be packaging wood. Incineration of other waste wood (not packaging) with energy recovery on site is in accordance with the minimum standard.

13.2.4 Incineration (as a form of disposal)

Incineration (as a form of disposal) is only permitted and under certain conditions for wood treated with CC and/or CCA salts.

13.2.5 Landfilling

Dumping is the minimum standard for wood that has been treated with CC and/or CCA salts. All other categories of wood may not be landfilled under the minimum standards. Wood (other than wood treated with CC and/or CCA salts) is subject to a dumping ban pursuant to Article 1(1), category 37 and category 43 of the Landfills and Dumping Bans Decreewaste(BSSA).

13.3Substances of very high concern (SVHC) and other substances of concern

The SVHC in the table below is known[83]to be present in wood in concentrations above the concentration limit in [Table 1] in the ‘SVHC and other substances of concern’ chapter. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Resistance of the fungus aspergillus to certain azoles

Repeated investigations by RIVM and others have shown that the processing of wood treated with biocidal products presents a real risk of Azolene resistance developing on the fungus Aspergillus fumigatus. This depends on a number of conditions. This may lead to serious health risks in certain forms of storage and processing, for more information on this resistance, as well as for the list of azoles for which this has already been demonstrated, see the detailed explanation provided in the [Afvalplan bio-waste].

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the processing operation must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 ‘legislation aimed at phasing out and restricting use’] of the ‘SVHCs and other substances of concern’ chapter.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see [Waste Management Licensing Guidance Document]. When applying for a permit, waste companies and the competent authority make a case-by-case assessment of which SVHCs and

other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the ‘approach to substances of very concern’ (IPLO) and the SVHC-navigator van RIVM.

Waste or non-waste

83 Sources: SGS Intron, 2019, SVHCs in waste and RIVM, 2024, memo SVHCs in chain plans.

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [chapter on waste or non-waste].

Overview of relevant SVHCs

The table below provides a (non-exhaustive) list of SVHCs that may be present in wood above the concentration limit value in [Table 1] of the chapter 'SVHCs and other substances of concern'. This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

SVHC	Regulations	Waste and description
Nonylphenol	REACH Candidate List	In B-wood products treated with bones. Nonylphenol (mixture of isomers) and 4nonylphenol (branched) can be used as an auxiliary substance in coatings.
Quartz	No additional information.	In primers or fillers with which B-wood has been treated. Quartz is a form of respirable crystalline silica dust.
Phthalates such as: • Dibutyl phthalate (DBP) • Bis(2-ethylhexyl) phthalate (DEHP)	• REACH Annex XIV (entry 4, 6) • REACH Annex XVII (restriction 30, 51)	In painted B wood with these substances added as plasticiser in paint.
Drill connections such as: • Boric acid • Diboron trioxide • Disodium octaborate tetrahydrate • Borax decahydrate • Borax pentahydrate • Disodium tetraborate	REACH Candidate List	Preserved C wood with added C-wood as a wood preservative.
creosote	REACH Annex XVII (restriction 28, 31)	In wooden railway sleepers, wood piles from fencing works, agricultural applications and wooden jetties. Used as a wood preservative; this has been banned in the Netherlands since 2001.
Pentachlorophenol (PCP)	POPs Regulation	In old C wood, in particular wood used for outdoor applications. Used for sustainability improvement, as of 1989 no longer allowed.
Arsenic trioxide	• REACH Annex XIV (entry 8) • REACH Annex XVII (restriction 28)	In CCA wood, for example, railway sleepers, posts, fencing (fences), wood applications in agriculture, jetties. Used as a wood preservative
Chromium trioxide	• REACH Annex XIV (entry 16) • REACH Annex XVII (restriction 28, 29)	In CCA wood and CC wood, for example, railway sleepers, posts, fencing (fences), wood applications in agriculture, and jetties. Used as a wood preservative.

14. Other information

14.1 Recovering critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to 'potentially recoverable critical materials'.

Waste wood is not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report 'Recovery potential secondary critical raw materials based on waste plans in the LAP3' (TNO, 2023).

[Section 2.3.6 'Critical materials and high dignity'] of the CMP's 'Recycling of waste' chapter provides more information on critical materials in relation to waste treatment.

14.2 BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report reflects the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

14.3 Mention of the source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022). *Concretizing conditions that prevent recycling as aminimum standard.*
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- CE Delft (2022). [Waste wood processing routes].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.
- RIVM (2024). [*SVHC in chain plans*].
- Tauw (2022). [*Exploration of the Wood chain plan*].

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

For wood, an amendment to the minimum standard for recycling of A and B wood (other than packaging) is desirable. The intention is to set minimum standards for A and B wood in the long term. The various forms of wood recycling will be taken into account.

Recycling of A- and B-wood is supported by the Cabinet's policy expressed in the NPCE: 'By 2050, the incineration of recyclable materials must be entirely historic'[84]. The Cabinet also states in the Sustainability Framework for Bio-Raw Materials[85] that burning biomass for energy production is, in most cases, of low quality and that, therefore, policies should mostly aim at phasing out. The use of biomass as material or feedstock (e.g. in chemistry or construction) is considered of high quality and therefore requires building-up policies.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

84 NPCE 2023-2030, summary, Section 2.1.4 'Incineration'

85 Letter to the Parliament on the sustainability framework for bio-raw materials, 16 October 2020

Circular Materials Plan Design

Paper and paperboard chain plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

Status: Circular Materials Plan draft for public consultation

Sender: Ministry of Infrastructure and Water Management

Date: January 2025

Website: circulaire materials plan.nl

Home > Materials > Chain plan paper and cardboard

Paper and paperboard chain plan

This chain plan provides businesses and public authorities with knowledge of the paper and cardboard chain. In addition, the competent authority will provide assessment frameworks for granting waste treatment permits and for the cross-border transport of paper and cardboard.

Synopsis

The first part of the chain plan describes the policies and objectives for paper and cardboard. It also provides businesses and public authorities with guidance on the choices that can help make the chain circular. It provides information on which legislation is relevant and which authority supervises this matter. The focus points for assessing whether the material is, or must remain, legally a waste material are also included.

The second part of the chain plan contains the assessment frameworks for authorising the processing and cross-border transport of paper and cardboard as waste. Competent authorities should take these assessment frameworks into account when making decisions. In addition, it provides an explanation of the assessment frameworks and additional information for taking decisions on the processing or cross-border transport of these wastes.

At the end, the future plans for this chain plan were described, both for the first part on the chain and for the assessment frameworks in the second part. For more information on the different chain and waste plans, please refer to [materials].

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Knowledge of the material chain

This chain plan is intended for parties in the paper and cardboard chain. From design, production and use to waste processing and re-use of materials in products. It is also aimed at policy-makers, permit providers and regulators along the chain, such as provinces, municipalities, ILT and environment services.

The chain plan covers all products made of paper or cardboard, such as books, magazines, boxes, packaging material and newspapers.

This section first provides an overview of the main public policies and current targets for paper and cardboard. This is followed by an overview of the chain and the key parties involved in the chain. It then explains what is meant by a circular chain and, for each chain stage, details the choices that chain parties can make in order to contribute to it. It explains the relevant legislation and the authority that oversees it. The final paragraph then explains the points of attention for the legal distinction between waste and non-waste in the paper and cardboard chain.

1. Policy and objectives

Policies to achieve a circular economy are set at EU and national levels. This section sets out the main relevant policy programmes and (legal) objectives.

1.1 European Union policy

For paper and cardboard, the packaging policy is important. The main legislation for this is the Packaging and Packaging Waste Regulation (PPWR).[86] On this basis, draft requirements are laid down, and targets for reuse and recycling are included. In addition, Article 11 of the Waste Framework Directive (WFD) (Directive2008/98/EC) requires Member States to collect paper separately. It also requires Member States to ensure at least 50% preparing for re-use and recycling of waste, such as paper and cardboard from households and similar sources.

1.2 The Dutch Government's policy

The Dutch policy is included in the National Circular Economy Programme (NPCE). In addition, the European packaging targets are set in the national legislation on extended producer responsibility.

1.2.1 National Circular Economy Programme (NPCE)

The NPCE sets out objectives and measures to ensure that the Netherlands is circular by 2050. For paper and cardboard, the programme includes a number of specific measures. This will test whether the yes/yes sticker for unaddressed printed matter can be imported nationwide. In addition, measures are taken to prevent the incineration or landfilling of recyclable paper and cardboard.

1.2.2 Sustainability framework for bio-based materials

The Dutch government is exploring whether the sustainability framework for bio-based raw materials can be extended to all applications, including paper. This allows an integral trade-off between the different applications of sustainable renewable raw materials. The cabinet also intends to map the desired number of bio-raw materials from

the circular transition and how it relates to the availability of sustainable bio-raw materials.

1.2.3 Extended producer responsibility (EPR)

Extended producer responsibility (EPR) means that producers and importers are financially and often also organisationally responsible for the waste management of the products they place on the market. The ExtendedProducer Responsibility Decreelays down general obligations. Packaging is subject to an EPR.

The 2014 Packaging Management Decreesets targets for collection, reuse and recycling. For paper and paperboard packaging, producers and importers are recycled as materials, per calendar year, of the quantity of paper and cardboard packaging marketed in the Netherlands in the previous year, at least 85 % by weight in 2025.

86 The legislative procedure for this regulation is still ongoing within the EU and has not yet been finalised. As this Regulation is expected, it has already been mentioned here.

Producers and importers who import or place on the market a specific product may request that the Minister declares a contract for the payment of a waste management fee to be universally binding (AVV). A AVV applies to packaging containing paper and cardboard, and a AVV applies to paper and cardboard (other than packaging) from Paper Recycling Nederland (PRN). For non-packaging of paper and cardboard, PRN should recycle at least 75 % by weight as material per calendar year of the quantity of non-packaging of paper and cardboard disposed of in the Netherlands in the previous year.

2. Supply chain and chain parties overview

A chain consists of several stages: design, production, use and processing. This chapter provides an overview of the different stages of the paper and paperboard chain and the main actors involved.

Figure 1: Design, production, use, processing chain phases

Draft

Paper producers determine the design of paper and cardboard. They work on behalf of clients such as printing companies, publishers and the packaging industry. The design is influenced by the requirements for quality, thickness and strength, function and finishing of the paper and cardboard. These factors determine, among other things, whether the paper is waterproof or resistant to heat and grease. It is also designed to improve the description and accessibility of the material. In addition to the use of traditional resources such as wood and waste paper and cardboard, the design also uses other (secondary) resources.

Manufacturing

The production of paper and cardboard starts from the extraction and production of raw materials and auxiliaries. Paper and cardboard are traditionally made from renewable raw materials:
Fibres (cellulose) derived from wood of trees. This wood originates from production forests. [The Wood chain plan addresses the issue of making the wood chain circular]. In addition, waste paper and cardboard are a key raw material for the production of new paper and cardboard. These can be made suitable for use as raw materials in the production process by recycling.

The paper and cardboard sector is internationally oriented. In the Netherlands, almost 2.4 million tonnes of waste paper and cardboard were collected separately in 2022. Around half of this collected tonnage is spent in the Netherlands. The other half is sold to paper and cardboard mills outside the Netherlands. In addition, around 1.3 million tonnes of waste paper were imported by Dutch mills from our neighbouring countries. Of the 1.2 million tonnes of waste paper and cardboard sold outside the Netherlands, around 950 ktonnes to 1 million tonnes were sold as secondary raw materials to paper mills inside the EU, and between 200 and 250 ktonnes were exported as secondary raw materials for the production of new paper and cardboard to mills outside the EU (source FNOI).

During the production of paper, various process and auxiliary materials may be added, which become part of the final product. These include substances that affect the strength of the paper (both in wet and dry conditions), its degree of transparency, its ability to communicate and describe, add colour, whiten the paper or protect it from fat, heat or moisture. The paper or paperboard can then also be equipped with a printer with a variety of inks and finishes with different properties such as water-tight and grease-proof coatings.

Use

Paper and cardboard are used in a variety of applications by consumers, organisations, the services sector and companies. It is used for books, magazines, scripts, advertising materials and graphic material, which reach consumers in particular. Digitalisation is slowing down the use of paper for, for example, mail, magazines and newspapers.

The packaging industry uses it to manufacture cardboard boxes, protective materials and food containers. Applications such as cardboard boxes and packaging materials, in particular, have been taking off in recent years, due to the increase in online purchases. The number of paper (food) packs has also increased, replacing single-use plastic. This application of paper and cardboard is short-lived, as is the case with advertising leaflets, magazines and many other graphic material.

Paper and cardboard are also used in construction material in plasterboard or the interior of internal doors. They are used much longer and the material is also difficult to separate or loosen. Books also have a long-term use, which is generally kept or transmitted for longer periods.

Processing

For households, paper and cardboard are collected separately using paper containers (underground) and recycling centres. This collection is the responsibility of municipalities. Companies collect it in separate containers and have it collected by appointment. However, some paper and cardboard still end up in the residual waste, partly because of their contamination or because of their limited space for waste separation. In certain sectors and industries, it is not yet an existing practice to offer or collect paper and cardboard separately. This is the case, for example, in the construction and demolition sector or in certain companies. The paper and paperboard is then eliminated from the paper ring.

Depending on the user, the paper collected differs in homogeneity. Paper waste from offices and printing or cutting waste from paper wholesale is quite clean and sometimes unprinted. Household paper and cardboard are much more heterogeneous in composition, consist of many more different paper and cardboard types, are often printed and contain paper-specific contamination such as staples and paper clips, but also waste such as food scraps.

The paper and cardboard that is collected separately reaches waste paper companies where the flow is sorted according to quality and cleaned of contaminants. The sorting process results in a small part of the power outage, which increases with the quality of the input flow being lower due to less good source separation. From there, it is transferred to paper and board producers and added back to the paper production process.

3. Circular economy choices

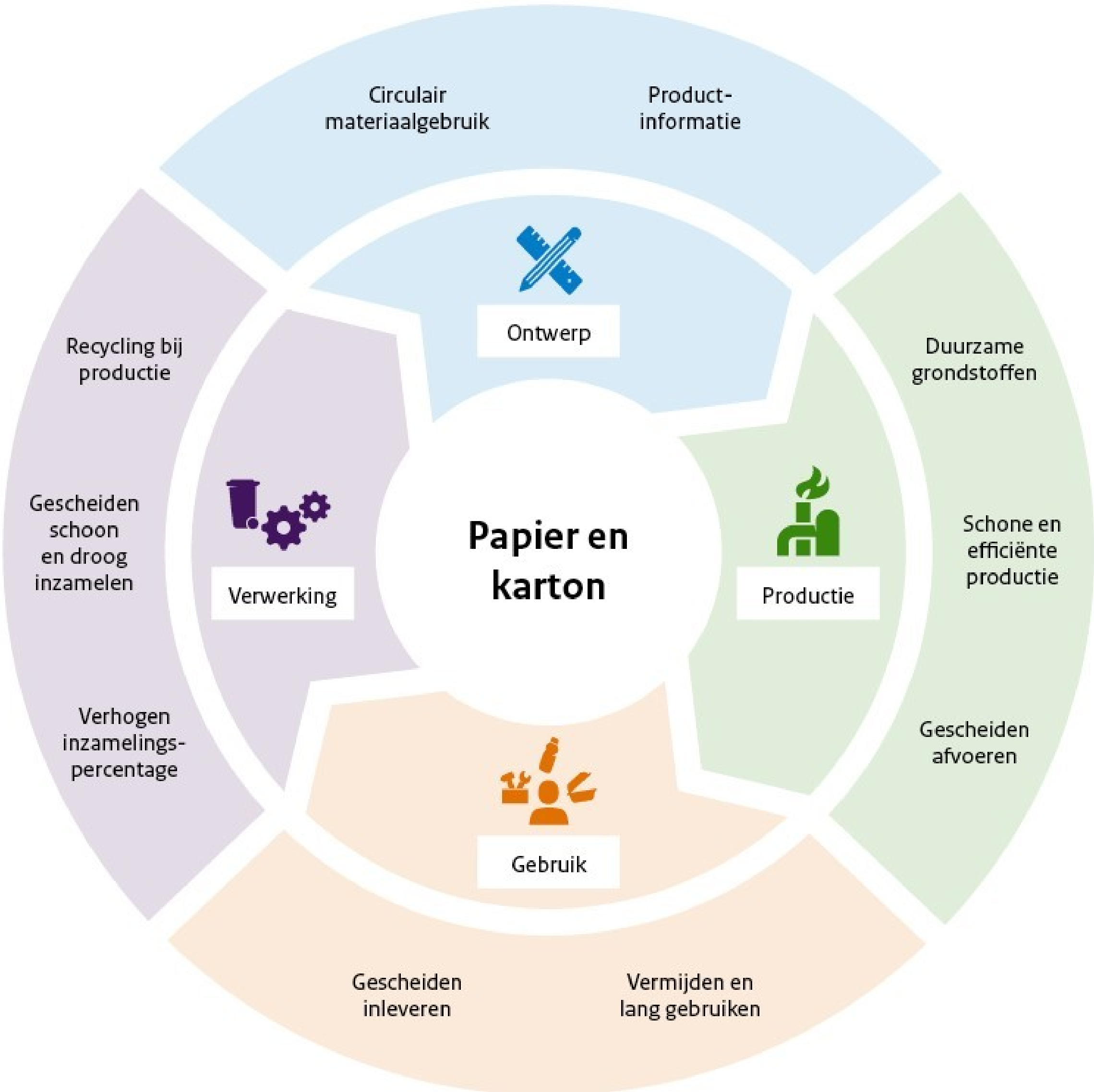
The National Circular Economy Programme (NPCE) indicates that the objective of the transition to a circular economy is to achieve economical and safe use of raw materials. The programme describes four steps to make resource use more circular:
reducing the use of raw materials, substituting raw materials with secondary raw materials and sustainable bio-raw materials or raw materials with a lower environmental impact, extending their lifetime and finally achieving high-quality processing.

In order to achieve a circular economy, each step must contribute and each chain party must adapt its circularity strategies. It is not just about good design or recycling. Each step in the chain influences a subsequent step. Circularity therefore covers the whole chain from design, production of raw materials, material and products, use including maintenance and repair to waste treatment, and high-quality application of recycled materials.

A circular chain for paper and cardboard entails that paper and cardboard are designed, produced, used and processed in a way that least puts the environment and people on board. Raw materials are used for as long and as high a quality as possible while maintaining their value without contamination by substances that hinder circular use. Aspects that are also relevant include energy consumption, water pollution and consumption, CO_2 emissions and the use of healthcare substances. Paper and cardboard products are designed for long-term use and contain recycled materials. Discarded materials are re-used as much as possible in new products that fit within the chain.

The following paragraphs explain, for each step, the choices that stakeholders can make in order to help create a circular economy, so that raw materials remain available and affordable. It explains the legislation that is relevant in this regard. Finally, attention is paid to when a material is legally waste or not.

Figure 2. Choices in each chain stage



4. Draft

The design of a product, how it can be used and later also discarded, recycled or reused determines its final environmental impact. Several options are available to paper and cardboard designers to make the paper and cardboard chain circular.

Figure 3: Choices at the design stage

4.1Circular material use

Circular design creates and preserves value for a paper product throughout the entire chain. The design of a product also plays a central role in keeping raw materials available. High-quality recycling is more difficult when materials are inextricably linked. The [Circular Material Use Chapter] sets out general design principles. These are presented below and are made specific to paper and cardboard whenever possible.

1. **Do not produce or buy anything that is not necessary**

The design of a paper or paperboard product should always start by considering whether paper and paperboard is the appropriate material to apply, going beyond the mere use, but also the recyclability or re-utilisation possibilities compared to other materials.

2. **Design and produce with less material**

In a circular economy, the manufacturer minimises the use of materials.

3. **Design and produce with renewable or secondary raw materials**

Traditionally, paper and cardboard are made from fibres (cellulose) derived from wood from trees. This wood originates from production forests. Paper and cardboard can also be made from other fibres. Different grasses are available, as well as plant stems that are suitable as raw materials for paper-board production. Furthermore, it is existing practice that used paper and cardboard are used as secondary raw materials on several occasions. The use of these secondary substances reduces the use of primary raw materials as wood. If reuse or recycling is not possible, primary resources are used as wood from a sustainable source.

4. **Design and produce for optimal service life**

The products are made in a way that allows them to last for a long time and is easy to repair or upgrade. However, please note that life-extending agents can be substances of concern and ultimately can also complicate recycling.

5. Design and produce for high-quality recycling

Paper and paperboard are applied in a circular economy in such a way that it is easy to separate from other materials, unless the other materials do not adversely affect reuse or recycling. So, in all sectors, designers think about how to easily separate the paper and cardboard fraction from the product.

6. Design and produce for standardisation

Standardisation ensures that a product is as broadly applicable as possible and better prepared for combinations with other products and future uses.

7. Design and produce for functional adaptability

In the case of paper and paperboard, this means the use of reversible glues, and smart fastening methods which do not require any additions. In addition, the industry is also looking at smarter packaging design to improve the customisation of packaging to avoid overpackaging, for example overpackaging with overpackaging that is too large or packaging that is unnecessarily large in volume. The design of the packaging is also under way to make it more foldable after use. As a result, the volume of containers leaving paper and cardboard (underground) is lower than or equal to the volume of containers filled.

8. Do not use healthcare substances

The Netherlands and Europe are committed to the transition to a non-toxic circular economy. This means that care substances are only applied where necessary for the production or functionality of a product or beneficial to the life-cycle (reparability) of a product or for the quantities of raw materials needed for a product and that emissions of care substances are avoided or minimised throughout the product chain (production, use, recycling). For paper and paperboard, this involves consideration of alternatives to substances of concern and consideration is given to substances of concern in the recycling of waste paper and cardboard (see section 13 of this chain plan).

9. Use in production of circular auxiliaries and renewable energy

Not only is the object or product, but also its production preferably circular. Consider minimising waste generation and minimising the use of energy, water and machines.

10. Maintain the value of products and raw materials as long as possible

For paper and cardboard, this means that it is used as little as possible for single-use products. Paper and paperboard retain its longest value if it can be reused or if the fibres are recycled as little as possible. The more paper and cardboard are recycled, the shorter the fibres become and the less suitable they are for reuse in the production process.

11. Consider the waste management stage beforehand

It is recommended that, prior to the introduction of a packaging or product, designers and producers of paper and cardboard packaging or other products first assess whether the packaging or product in question is highly recyclable according to European practice. The Knowledge Institute for Sustainable Packaging (KIDV)has developed a recycling check for, among other things, paper and cardboard, to determine whether a paper and cardboard packaging is highly recyclable. A partnership of paper producers and paper recyclers called 'Circular Paper' has produced a set of recommendations for the design of paper and cardboard to ensure that they are highly recyclable. This document indicates, among other things, the steps that have to be taken and those that have not to be taken, in order to ensure that choices made early in the paper production process lead to the paper or paperboard being recyclable at a later stage. It also indicates how to deal with process and auxiliary substances in order to improve the recycling of paper and cardboard. In addition, recommendations are made to ensure that paper and cardboard are more easily and correctly disposed of by users during the waste phase. These recommendations can be found on the Circular Paper website.

For paper and paperboard products, different product and substance legislation may apply. For general care substances, the REACH Chemicals Regulation (Regulation (EC) No 1907/2006) and the POP Regulation for persistent organic pollutants (Regulation (EU) 2019/1021) are relevant. More information on the legislation governing substances of concern can be found in the [Chapter on SVHCs and other substances of concern]. [Section 13.3 'Substances of very high concern (SVHCs) and other substances of concern'] of this chain plan provides more information on substances of concern in paper and cardboard waste.

For packaging and products made of paper and cardboard, such as cutlery and crockery, the European General Product Safety Regulation (Regulation EU 2023/988) and the Dutch Commodities Actimportant. The Food Contact Materials Regulation (Regulation EC 1935/2004), the Dutch Commodities Act Decree on packaging and Consumer articlesand the Commodities Act Regulation on packaging and consumer articlesrelevant. The proposal for the Regulation on packaging and packaging wasteallows the European Commission to set draft requirements for the recyclability of packaging.

The Netherlands Food and Consumer Product Safety Authority (NVWA) and the Human Environment and Transport Inspectorate (ILT) monitor the above legislation. The [legislative overview chapter] provides more guidance on legislation that is relevant for product design.

4.2Product information

In a circular economy, the producer delivers the product with a calculated environmental impact and prepares a product passport. This applies to all products. For paper and paperboard products, this is not yet mandatory. However, various labels and logos are used as consumer information. If products are made with wood fibres from sustainably managed forests, they must be marked on the product or packaging. The obligation to display a logo on the product applies to paper or cardboard packaging or disposable products containing plastic. This is an obligation under the European single-use plastics directive (also known as sup directive; Directive (EU) 2019/904). The Knowledge Institute for Sustainable Packaging (KIDV) has also introduced a 'Weggooiwijzer' logo to show that a packaging is allowed to accompany the waste paper and cardboard. This logo helps to make the abandonment of paper-based products clearer to the consumer.

5. Manufacturing

Producers have a significant impact on the environmental impact of paper and cardboard. In a circular economy, producers need to produce high-quality paper and cardboard that last long hours to save raw materials and reduce environmental impact. The production and consumption of the product should not exceed the planetary boundaries.

Figure 4: Production Phase Choices

5.1Sustainable Raw Materials

The paper production process consumes a lot of water and energy and emits CO_2 and NO_x. Replacing primary, abiotic raw materials with secondary raw materials and bio-raw materials is crucial for reducing the greenhouse gas footprint, among other things. The opportunities for a circular economy lie in scaling up the use of more alternative secondary sustainable bio-raw materials, other than wood. All cellulose fibres are highly recyclable, provided they are unlocked. This means that the cellulose is freed from the plant material from which it is obtained. Several trials are ongoing on alternative fibre sources such as miscanthus, bear grass and stem and plant leaves fibres. Research on the exact environmental impact of making these fibres available has not yet been completed.

The members of the Royal Association of Dutch Paper and Cardboard Mills (VNP) investigate the future availability and expected quality of raw materials. An important topic is the research on alternative raw materials: biomass residual flows such as tomato stems, grass-roots cultivation, old textiles and fibre crops such as hemp and miscanthus – locally grown, on land not suitable for (animal) food production.

If the company uses residues, residual streams, used products and waste, it is necessary to answer the question whether a material is legally a waste or not. This is because waste operations are subject to specific rules or require a permit. The basis for this assessment is provided by the EU Waste Framework Directive (Directive 2008/98/EC) and it has been implemented in the Netherlands in the Environmental Management Act and elaborated in the CMP in the
[waste or non-waste chapter] and its associated Guide to waste or non-waste.

5.2Clean and efficient production

Dutch producers make energy mix choices and what materials and substances they use in their own production process. They also make choices in the production process that affect the local environment and the use of raw materials and the generation of waste from the company. For example, for paper and board producers:

- Water used should be restored to its suitability for reuse in the production process to the greatest extent possible.
- Cutting waste is produced when paper is cut. Paper producers should strive to minimise the waste which cuts, while applying what is happening in new products. This practice is already in place.
- Residues released from the production process, paper injections and paper sludge should be disposed of as secondary raw materials as possible. See the [Waste plan residues] for this.

The question of waste or by-product can be determined using the [chapter on waste or non-waste]. In the Netherlands, production processes are subject to general rules and permit requirements under the Living Environment Law (Activities) Decree (Bal). It depends on the activities that are carried out by the company. If applicable, the permit issuer also assesses the use of resources and waste prevention during the permit. More details are provided in the [Raw materials use and prevention section]. Authorisation, supervision and enforcement are carried out by environmental services on behalf of provinces and municipalities.

5.3Separate disposal

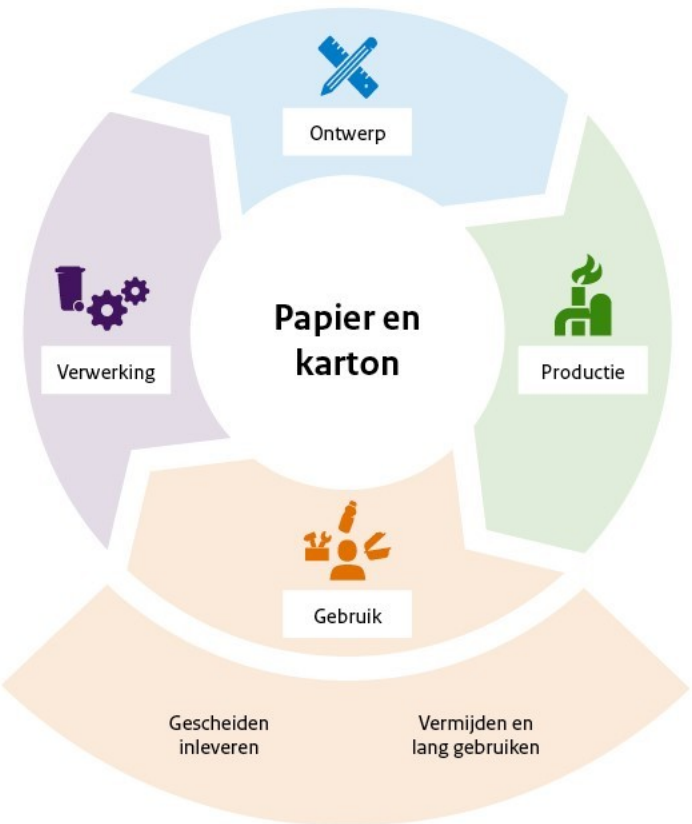
Residues that cannot be used in one’s own business are minimised in a circular economy. These should be kept separate from other streams. This will allow them to be re-used in the best possible way or, in the case of hazardous substances, to be processed safely and responsibly.

The Bal and CMP require all producers to keep their waste separate and dispose of it separately. The CMP in [Keep business waste and hazardous waste separate] further details the waste that companies are required to separate. Producers must register the waste and only hand it over to a company with VIHB registration or a processor with an appropriate process and authorisation. This is stated in Article 10.37 of the Wetmilieubeheer.

6. Use

The way the paper and cardboard are used also affects the environmental impact of the product. Most paper and cardboard have a relatively short lifespan during the use phase. It serves as packaging material for the supply and/or protection of products and online orders; it is printed for newspapers, printed matter or magazines, single-use food packaging, or it is used for stationery or books (in which case the turnaround time is longer).

Figure 5: Use-phase choices



6.1Avoid and use for a long time

As paper and cardboard often have such a short lifespan, it is important for consumers and businesses to consider whether use is necessary or avoidable.

A tool that can be used for this purpose is theMVI-criteriasetting out criteria for State socially responsible procurement (MVI). The authorities may impose requirements on the materials that make up products.

Consumers can indicate by means of a ‘no/no sticker’ that they do not receive unaddressed printed advertising material and door-to-door papers. In some municipalities, a variant has been introduced; the yes/yes sticker. Only if people have received this sticker on the letterbox, they receive printed advertising material and magazines at home.

Nowadays, newspapers, magazines and books can easily be read online. The most important option is to use paper or cardboard products for the maximum duration possible, if the products are purchased. This can be done for books, magazines and newspapers by reading them together, passing them on to a subsequent user or borrowing them.

Packaging can be reused as long as it remains clean, dry and whole. The impact of ordering online and all packaging is significant. Packaging (size) optimisation by senders is important. Users need to be made even more aware of the impact of ordering online and the huge amount of paper and cardboard packaging material involved.

6.2Surrender separately

Paper and cardboard are used by individuals, businesses and authorities alike. Paper and cardboard are most valuable if they are kept separate from other waste and are delivered as clean and dry as possible for recycling. The importance of clean and dry collection is further discussed in Section 7.2.

For private individuals, source-separate collection of waste paper and cardboard is possible in each municipality. The Waste Ordinance or the environment plan state what residents need to separate and how to offer them. For businesses and organisations, the Environmental Activities Decree requires waste to be kept separate and removed separately from paper and cardboard. The CMP in [Keep business waste and hazardous waste separate] further details the waste that companies are required to separate. Environmental services monitor this.

7. Processing

Consumers, businesses, but also collectors and recyclers have an important role in preserving the raw materials at the end of the life of a paper or cardboard product. By collecting as much clean and dry paper and cardboard as possible with the least pollution possible, paper and cardboard can be recycled as much as possible. Recyclers have to produce good quality paper and cardboard recyclate that can be re-used in paper and cardboard products.

Figure 6: Processing stage choices

7.1 Increase collection rate

The recycling rate of paper and cardboard that is collected separately from the source is 87% on average in 2022 (90% for packaging and 83% for non-packaging, source PRN). The addition of 'one-sided' laminated paper and cardboard to the waste paper and cardboard increases the percentage of material to be recycled. The Knowledge Institute for Sustainable Packaging (KIDV) has introduced a 'Weggooiwijzer' logo to show that a packaging is allowed to accompany the waste paper and cardboard. This encourages producers and importers to produce packaging that is recyclable and can be collected. The logo also helps consumers to understand how to dispose of the paper products.

With the entry into force of the Environment Act(Ow) and the obligation for certain businesses and sectors to collect paper separately, the collection rate and therefore the recycling rate are expected to increase further.

7.2 Separate clean and dry collection

As indicated above, paper and cardboard can only be recycled if it is separated at source, clean and dry. Several standard systems are used to determine when a lot of paper and cardboard is clean and dry, depending on the location in the chain. In the section [Waste assessment frameworks] of this chain plan, the minimum standard specifies the standard system to be applied for this chain plan.

The Policy Rule on Administrative Enforcement Paper-, Plastic-and Metal Waste 2015specifies when clean and dry paper and cardboard waste is involved. This is the case where paper and cardboard waste:

- does not contain hazardous waste;
- food waste and other organic residues have been removed as far as possible;
- has been stripped of visibly incinerated material as far as possible;
- may contain up to 2 % by weight of components other than paper; and
- the moisture content of the paper waste is less than or equal to 12 % by weight.

The 7th Paper Fibre Covenantsets out quality requirements for non-product pollution in the waste paper and cardboard offered to recyclers by municipalities to waste paper companies. These requirements include that the paper offered must not contain more than 3 % of non-product contamination and not more than 10 % moisture.

In addition, there is also a quality standard EN 643for waste paper and cardboard. This is the most widely used quality standard for waste paper in Europe, used in contracts between waste paper companies and paper mills. In the Netherlands, all paper mills use this standard. The EN 643 standard is a standardised quality standard for 57 types of paper and cardboard that can be used for trading waste paper and cardboard, and has maximum pollution values for each of these categories. The maximum percentage of extraneous contaminants allowed in the product is 1.5% (lower for several categories). In addition, a maximum of 10% moisture is allowed.

Some of the paper and cardboard used end up in residual household waste, residual industrial waste or mixed construction and demolition waste. At the time of writing this chain plan, the post-separation of this paper remains very limited. Post-separated paper and cardboard are now hardly suitable for recycling due to the level and nature of the contamination. The [future plans] of this chain plan further address this flow and possible developments.

7.3Recycling during paper and cardboard production

Both fresh and paper and paperboard fibres are used in the production of paper and cardboard. Fresh fibres, also known as cellulose, come from pulpwood. Waste paper and cardboard fibres may be used several times before being too short, which means that they may lose strength to be usable in their manufacture. This means that the incineration of this material will produce energy. Current market developments focus on reducing water use and the climate impact (e.g. paper and board production costs a lot of energy) and replacing primary material with alternatives.

In 2050, the incineration of recyclable materials such as paper and cardboard must be all the past. This calls for intervention on the front of the chain. This implies that efforts should be made to prevent the presence of paper and cardboard in residual waste incinerated. Firstly, this means that the separation at the source must increase. This results in a mono-stream that is relatively easy to recycle.

Furthermore, the design should prevent paper and cardboard from being unsuitable for recycling. Last but not least, it should be applied to the subsequent separation of paper and cardboard that might end up in residual waste. The [Future Plans] of this chain plan addresses this intervention in the chain.

8. Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term ‘waste’ should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to do this assessment itself can be found in [chapter on waste or non-waste] of the CMP and the Guide on waste or non--waste.

For paper and cardboard, here are some specific points for attention when assessing waste and non-waste. These points do not describe the full assessment framework.

Reuse

In order to determine whether there is reuse or waste, it is important to establish the holder’s intention with the paper and cardboard. If a holder discards or wants to discard the paper and cardboard, this is waste. Offering books and magazines, for example, to a thrift store, may involve re-use. However, the store should check books and magazines when they are received and only accept them if they are suitable for reuse. It is also possible to reuse certain paper and cardboard containers, such as protective materials, boxes and envelopes. However, their suitability for reuse should be assessed. For example, the paper and cardboard must still be clean and dry before being used again for the same purpose. In addition, sufficient certainty must be given that reuse will actually take place. The assessment of whether a material is waste or non-waste will require a case-by-case assessment of the waste status of the material, based on all the facts and circumstances of that case.

By-product

Different raw materials are used in the manufacture of paper and cardboard. Wood is a primary raw material, but other plant material grown is also used. This concerns plant material that is released as a residue from a production process or as a residual material. The question is whether the material is a waste or a by-product. For the use of tomato stems and leaves, a legal aspect[87] was issued in 2016, which specifies that there may be the use of a by-product and therefore no

87See Legal opinions - Waste Circularfor the legal opinion waste material for the production of paper and cardboard. The test points can be derived from this legal aspect. Please note that any assessment of waste or non-waste must be carried out in accordance with current regulations and policies. This could mean that with the same test points, there could now be a different conclusion for waste status, due to changes in regulations or policies. The assessment of whether a material is a waste or by-product will require a case-by-case assessment based on all the facts and circumstances of the particular case and on the conditions set out in Article 1.1(4) of the Environmental Management Act(WM).

In the production of paper, residual materials are released in the form of trimmings. As long as this material complies with all the legislation on substances and products and technical regulations, the material may be reused for paper/cardboard production. The assessment of whether a material is a waste or a by-product will require a case-by-case assessment based on all the facts and circumstances of the particular case and on the conditions set out in Article 1.1(4) WM.

End-of-waste

If the waste paper and cardboard (both packaging and non-packaging) is presented to the waste collector, it is waste. Separately collected clean and dry paper and paperboard is delivered to the paper industry after collection, recycled and returned to the production of paper and cardboard. The paper and cardboard are used as waste and recycled into a new product. Once recycling has been completed, the conditions set out in Article 1.1(6) Environmental Management Act(Wm) and [Chapter on waste or non-waste] allow an assessment of whether end-of-waste exists, based on all the facts and circumstances of the case.

If used paper and cardboard are not clean and dry, this means that it can no longer be used for its original purpose or made suitable. It will then have to be processed differently as waste. This waste treatment may be another recycling operation or recovery operation, provided that it is permitted by law, regulation or policy, such as that contained in this CMP. Once this processing operation has been completed, an assessment of the existence of end-of-waste can be made on the basis of the conditions set out in Article 1.1(6) WM and [chapter on waste or non-waste], based on all the facts and circumstances of the case.

Non-waste on the market

In all cases, where paper and cardboard are placed on the market as non-waste (direct or otherwise) or after recovery, it must comply as a minimum with the applicable product regulations. These include REACH, the POP Regulation and the requirements arising from the Commodities Act.

Waste assessment frameworks

This section of the plan describes how companies should process paper and cardboard and the focus points. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take into account the CMP when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this section has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this section is primarily written for waste processing companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, the paragraphs explaining why are of particular interest.

9. Defining assessment frameworks

The provisions of this chain plan apply to the following wastes:

Waste	Explanatory Note
Separately collected or delivered clean and dry paper and cardboard from both households and businesses (clean paper waste)	These are (without limitation) newspapers, printed matter, magazines, graphic paper (from printers and copiers), paper and cardboard packaging and cuttings.
Wet or soiled paper and cardboard collected separately or delivered separately from both households and businesses	The Policy Rule on Administrative Enforcement of Contaminated Paper-,plastic-and Metal Waste 2015elaborates on the absence of clean paper waste.

Paper and cardboard that has not been separately collected and that can only be made available by post-separation of residual household waste, industrial waste, construction and demolition waste, and sewage treatment plants, is not yet covered by the definition of this chain plan.

A detailed explanation of the scope is provided in [paragraph 12]. Part of this is an overview of waste similar to that of this chain plan, but covered by other waste or chain plans.

10. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The paragraphs below address the following aspects that are relevant for authorising paper and cardboard processing:

- mixing of waste (10.1);
- the minimum standard (10.2).

10.1Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check whether mixing requires a permit.

10.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories. The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
26	Nga	Paper and cardboard, except undeveloped photo paper	Clean and dry paper and cardboard.
112B	Nga	Other non-hazardous waste that cannot be disposed of in a landfill in accordance with the Landfills and Waste Dumping Prohibitions Decree or a minimum standard in circular Materials Plan	Non-recyclable paper and cardboard.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are contained in [section 13.1.1 ‘Keeping waste separate’].

10.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter Mixing of waste] and its assessment frameworks. For paper and paperboard, this plan does not contain any specific provisions that the AACC should take into account in derogation from the general assessment frameworks.

[Section 13.1.2 ‘Explanatory notes on waste mixing’] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of paper and cardboard.

10.2Minimum standard

Paper and paperboard processing must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality processing unless the minimum standard contains specific restrictions.

The competent authority can only grant permits for the processing of waste in a way that is lower-grade than the minimum standard in exceptional cases such as emergencies or the presence of certain SVHCs. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to paper and cardboard processing:

Component flow	Waste	Minimum standard
a	Clean paper and cardboard	Recycling.
b	Paper and cardboard not suitable for recycling. This concerns paper and cardboard: • for which recycling is not technically possible because the waste has not been sufficiently cleaned of food waste and other residual organic matter; and/or • contains not less than 2 % by weight of components other than paper; and/or • contains not less than 12% of moisture by weight; and/or • for which recycling is so costly that the costs of handing over these batches by the disposer at the gate of the processor would exceed 265 euros/tonne.	Other recovery (e.g. primary use as fuel).

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 13.2 ‘Explanation of the minimum standard’].

Wastes containing certain SVHCs

SVHCs may be present in the waste. Both the legislation described and the assessment frameworks of [Chapter mengen van afvalstoffen] and [Chapter SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 13.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

11. Cross-border transport assessment framework

The assessment framework below is based on the [cross-border transport section]. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this chain plan, the above has been developed into a specific assessment framework for assessing whether the transfer of paper and cardboard is permitted. If this specific assessment framework differs from the provisions of the cross-border section, the assessment framework of this chain plan is proposed.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is further discussed in the [cross-border transport section]. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by ‘nEVOA’. In other cases, only the ‘WSR’ appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term ‘degree of recovery’ is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase ‘any landfilling or other disposal’. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place that restrict processing under the POPs Regulation. [SVHCs and other substances of concern] in this plan provides an overview of SVHCs that may be present in the waste. [Chapter on SVHCs and other substances of concern] provides an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Scope of the assessment framework, grounds and conditions for objection

The following assessment framework applies to all paper and paperboard sub-streams as indicated in [the minimum standard] of this chain plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions.

The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- imports from outside the European Union and exports to outside the European Union, unless verification against the EVOA already results in an objection directly see [Section 3.3.1. ‘prohibitions’] of the ‘cross-border transport’ section.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to ‘transfer for recovery’ (Article 12 EVOA). The second table contains the grounds for objection related to ‘transfer for disposal’ (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is not authorised	Specific provisions and grounds for objection
Preparing for re-use	If the degree of recovery does not justify the shipment. In this case, any landfilling or other disposal is too much (grounds for objection 12(1)(b) and (i) EVOA (Article 12(1)(g) EVOA)).
(Interim recovery followed by) recycling	If the degree of recovery does not justify the shipment. This is the case if the component stream is not fully recycled or/and if part of the shipped waste is landfilled or otherwise disposed of (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR)).
Other recovery	This is because higher-quality processing in the form of recycling is possible unless: • the notification indicates that recycling is not technically possible; or • the notification shows that the cost of recycling exceeds EUR 265 per tonne; and • some of the shipped waste is not yet landfilled. (ground for objection Article 12(1)(a), (b) and/or (e) and (i) EVOA (Article 12(1)(a) and (g) and, for transfers to the Netherlands, Article 12(1)(k) EVOA)).

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
All forms of (preliminary) disposal except landfilling	This is because higher-quality processing in the form of recovery is possible (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
Landfill	This is because higher-quality processing in the form of recovery is possible; and • national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or cross-border transport of paper and cardboard waste.

12. Explanatory notes on the scope

This plan applies only to paper and cardboard collected separately and delivered separately. This chain plan does not cover paper and cardboard removed by the disposer as part of residual waste. As regards paper and cardboard packaging, this chain plan has a strong link to the [Waste plan packaging]. In base, packaging has its own waste plan, as it has its own (recycling) targets. For high-quality processing and cross-border transport, this waste plan refers to this chain plan.

The scope refers to the (criteria set out in the) Policy Rule on AdministrativeEnforcement of Contaminated Paper-, Plastic,- and Metal Wastefor determining when *clean* paper is involved. It states that (check always the Policy Guideline itself):

- paper waste does not contain hazardous waste.
- paper waste has been disposed of as far as possible from: -food waste and other residual organic matter and -material visibly incinerated.
- paper waste contains up to 2 % of non-paper components.
- moisture content in paper waste is not more than 12 %.

The separation guideof the Dutch Paper Recycling Foundation (PRN) also provides practical guidance as to what is and what is not admissible in connection with the waste paper. Examples of what should not be: used kitchen paper, beverage cartons and used paper coffee cups.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Paper and cardboard not separately collected	[Waste plan residual waste]
De-inking residue and paper sludge	[Waste plan process-dependent industrial waste]
Rejects (such as staples, paper clips, twine and plastic magazine sleeves released during the processing of separately collected paper and cardboard)	[Waste plan process-dependent industrial waste]
General packaging and beverage cartons	[Waste plan packaging]

EURAL codes related to this plan (indicative)

The following EURAL codes may concern waste within the scope of this chain plan: 150101; 191201; 200101.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this chain plan determines what is covered by this plan, and not this enumeration of Eural Codes.

13. How to prepare high-quality notes

13.1Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 10.1.2 ‘Mixing permission’] sets out the assessment framework for allowing mixing paper and cardboard. In the case of ‘mixing’, this is described in [Section 4.1 ‘Definition of mixing’] of the ‘waste mixing’ chapter.

13.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep paper and cardboard separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that 'mixing' is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	At the construction and demolition sites of construction works, there is no legal requirement to keep paper and cardboard separate and separate, released during the actual performance of construction and demolition works on construction works *(Art.*). *7.24, 7.25 and 7.26 Living Environment Buildings Decree*). Other construction and demolition sites (e.g. construction or demolition of roads or sports fields) are subject to the rules of the Bal as described in the following rows.
Keeping industrial waste and hazardous waste separate *(general)*	If a company stores larger quantities of paper and cardboard, it must also keep paper and cardboard separate from other waste of the same category and from non-waste, unless a mixing permit has been granted (*Article*) *3.195 and art. 3.196 Baland 'waste mixing' chapter*). The quantities in storage are laid down in Article 3.185 Bal. [Waste mixing chapter] of the CMP and [Section 10.1 'Mixing permission'] of this chain plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	This paragraph applies only to the separation of waste from disposers. This concerns only disposers who store, blend, bulge, separate, repackage and/or compact the waste exclusively. For these disposers, different rules apply as regards keeping them separate in general. Businesses must keep paper and cardboard separate and dispose of them separately if required by the CMP *(Article) 3.39 Bal)*. In [section 'Keeping corporate and hazardous waste separated'], it is indicated when this is the case. In other cases, mixing with other waste that also does not need to be kept separate is allowed. A company that still wants to mix paper and cardboard separately with other waste needs a licence. [Waste mixing chapter] of the CMP and [Section 10.1 'Mixing permission'] of this chain plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep paper and cardboard separately collected by waste category *(Article*). *1bWaste Collection Decree*).
Recycling centre	Paper and cardboard is one of the 18 waste substances for which the waste collection point must have a storage facility or indicate to private individuals where it is not collected by the waste collection point itself *(Article*). *4.623 Bal)*. For paper and cardboard, the competent authority may issue a specific requirement authorising the collection point not to have a separate collection facility, but to store it as a smart mixture. Conditions include that it is impossible to have a separate facility for all 18 wastes and that the same level of waste separation is achieved through post-separation or other
	measures. In any case, paper and cardboard must not be used with the waste container. See [chapter on separate collection of household waste]. This chapter deals specifically with divorce at the collection point. [Chapter on separate collection of household waste] specifically addresses separation at the collection point.
Municipal collection *(household waste)*	Municipalities are required to collect paper and cardboard separately from households. [Chapter on separate collection of household waste] sets out the obligations of municipalities.

13.1.2 Mixing notes

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations. Always check whether the mixing of paper and cardboard is covered by all of the section's assessment frameworks.

The essence of allowing the mixing of paper and cardboard is that after mixing, processing should remain possible in accordance with the minimum standard. This means that:

- The Authority may only grant a permit for mixing non-recyclable paper and cardboard with other waste (within waste category 112B) with the aim of recovering the waste in a different way than recycling if, prior to mixing, the company has demonstrated that:
  - food waste and other residual organic matter have not been sufficiently removed; or
  - the waste contains not less than 2 % by weight of components other than paper; or
  - the waste contains not less than 12% of moisture by weight; or
  - the recycling route is so expensive that the costs of delivery of these batches by the disposer at the gate of the processor would exceed 265 euros/tonne.
- In addition, the company is not allowed to mix non-recyclable paper and cardboard for self-incineration in a mobile plant or to deliver them to a mobile incineration plant, as these plants do not provide sufficient guarantees to reduce emissions to air.
- The competent authority may grant a permit to mix batches of clean and dry paper and cardboard (within waste category 26) for as long as recycling of the waste remains possible.
- Mixing of paper and cardboard that is clean and dry (waste category 26) and paper and cardboard that is not recyclable (waste category 112B) is not permitted, as this would render recycling of clean and dry paper and cardboard impossible.

13.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about minimum standards [Section 10.2].

Waste hierarchy	Summary
Reuse	Reuse does not imply waste treatment. [Section 8 ‘Waste or non-waste’] describes the possibilities for reuse if they are known.
Preparing forre-use	Permitted on the basis of the minimum standard.
Recycling	Recycling is the minimum standard for clean paper and cardboard. Paper and paperboard fibres are suitable for recycling provided that the paper and paperboard is clean and dry. The fibres can then be used again to produce paper and cardboard.
Other usefulapplication	Where paper and paperboard are not clean and dry and it is not technically possible to recycle the fibres, other recovery is permitted under set conditions.
Incineration as a formof disposal	Incineration as a form of disposal is not permitted.
Landfill	The dumping ban applies to paper and cardboard.

13.2.1 Preparing for reuse

The Authority may grant a licence for processing operations resulting in the reuse of paper and cardboard. Paper and cardboard are often of low capacity for reutilisation by preparing for reuse if this is not immediately possible. Paper and cardboard are often discarded into the paper container or underground paper container after use and are no longer suitable for reuse.

13.2.2 Recycling

The minimum standard for processing clean and dry paper and cardboard is recycling. [Section 7 ‘Processing’] of this chain plan already describes the possibilities for recycling.

The minimum standard specifies that in certain cases, if recycling is not possible, paper and cardboard may be recovered in a way other than recycling (see below).

13.2.3 Other recovery

For paper and cardboard that is not suitable for recycling, the minimum standard is other recovery. Incineration with energy recovery is permitted. The minimum standard states that this applies to paper and cardboard:

- that the removal of food waste and other residual organic matter is not sufficient; and/or •contains a minimum of 2% by weight of components other than paper; and/or
- contains not less than 12 % of moisture by weight.

These provisions are derived from the Policy Rule on Administrative Enforcement ContaminatedPaper-, Plastic,- and Metal Waste.

The same applies to paper and cardboard for which recycling was found to be too expensive (more than 265 euros/tonne at the gate of the processor).

Show that it is not suitable for recycling or that it is expensive to recycle

Section 2.4.1 'The minimum standard includes certain exceptions' of the [Guide to the use of the minimum standard] sets out how a company should demonstrate this. The costs that may be included in the calculation of the amount of 265 are described in [section 5.3.2 'What is included in the limit of EUR 265?'] of the 'Use of the cost criterion' section. If, for the same reason, these wastes are transferred for another method of processing (to or from the Netherlands), the notification file must contain the information described in [paragraph 5.4 'Export and the limit value of EUR 265 per tonne'] of the 'Use of the cost criterion' section.

'Other recovery' facilities (e.g.: Incineration plants with R1 status) wishing to accept such batches of paper and cardboard must, in their acceptance policy, accept batches of paper and cardboard only if it is shown that the waste is not suitable for recycling or that recycling is more expensive than EUR 265.- per tonne. The acceptance policy must specify how this is to be demonstrated by companies and how it is to be administered by the incineration plant. In doing so, the AVI relies on the assessment framework in Section 2.4.1 'The minimum standard contains exceptions' of [the Minimum Standard Use Guideline].

13.2.4 Incineration as a form of disposal

Incineration as a form of disposal (D10) is not permitted because recovery is possible for all sub-streams specified in the minimum standard.

13.2.5 Landfilling

Under the Landfills and Waste Dumping Prohibitions Decree(Bssa), Article 1(1), Category 39, a dumping ban applies to paper and cardboard. More information on the dumping bans can be found in [Preparing and implementing a dumping ban chapter].

13.3Substances of very high concern (SVHC) and other substances of concern

Paper usually has a relatively short lifespan before it is discarded. Therefore, when a ban is imposed on the use of a particular substance in paper, the banned substance is not expected to be commonly found in waste after a relatively short period of time. As indicated in the memorandum 'SVHCs in chain plans' (RIVM 2024), some SVHCs may still occasionally be present in paper in a sub-fraction above the concentration limit value (cgsi) in [Table 1] in the chapter 'SVHCs and other substances of concern'. This means that the probability of a SVHC being present above the GW is only relevant in situations where a specific batch of waste is produced. For example, in the process of cleaning up archives, substances that have since been banned may enter the waste stream, for example PCBs. No more PCBs containing auxiliary materials are now used in the paper industry but until 1970/1991 they contained copy paper PCBs. Bisphenol A is also no longer used but can be found in specific parties consisting of industrial thermal paper, such as cash receipts, that were placed on the market before 2020. As of 1 July 2022, PFOA, PFOS, PFNA and PFHxS are banned in food packaging in the Netherlands. These banned PFAS are increasingly detected in Europe at a much lower concentration because they have already been replaced in Europe by shorter PFAS compounds. Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) can be found in coatings on food containers that discard fat and water such as pizza boxes, popcorn paper and fast-food products RIVM Brief Report 2018-0181. These substances may still be found in the disposal of remnants of inventory.

14. Explanatory note on cross-border transport

Classification in the case of shipments of waste

Several procedures are described in the WSR. The information requirement (Article 18nEVOA/ Article 18 EVOA) applies to waste covered by Article 4(4) and (5) nEVOA (Article 3(2) and (4) EVOA). The term ‘green list’ is also used in daily practice for these wastes. The ‘green list’ is defined only in the OECD Decision and is part of the Annex III EVOA. In many cases, ‘green list waste’ can be shipped without notification, provided that it contains the information specified in Annex VII of the EWSR. These are waste that has not been mixed with other waste and can be processed elsewhere without significant environmental burden. The notification procedure applies to waste covered by Article 4(1), (2) and (3) nEVOA (Article 3(1) and (3) EVOA). The term ‘orange list’ is also used in daily practice for these wastes. The ‘orange list’ is defined only in the OECD Decision and is included in the Annex IV WSR.

An indicative list of ‘green list’ codes that may be covered for waste in this chain plan is given below. Paper waste can be of different origins and thus of different quality.

In order to classify paper waste under ‘green list’ code B3020, the ILT has drafted the Policy Rule on Administrative Enforcement of Contaminated Paper-, Plastic-and Metal Waste . The criteria herein also apply to the use of code B3020 in this CMP and to distinguish between clean paper waste and wet and contaminated paper waste.

For waste from the pre-treatment of composite packaging for liquids consisting of non-separable plastic fraction or non-separable plastic-aluminium fraction, the separate code B3026 applies. Self-adhesive label laminate waste containing raw materials used in label material production also has a separate code B3027.

For composite packaging, which consists mainly of paper and plastic materials including ‘kraft bags’, a separate code BEU04 on the ‘green list’ is under Annex IIIB. For this, the ‘green list’ procedure applies only to intra-EU transfers.

Indicative list of codes based on the ‘Green list’

Codes based on the ‘Green list’	Codes
Codes based on Annex IX of the Basel Convention	B3020, B3026, B3027
Codes based on Annex IIIB of the EVOA	BEU04

15. Other information

15.1 Recovering critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to ‘potentially recoverable critical materials’.

Paper and cardboard are not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report ‘Recovery potential secondary critical raw materials based on waste plans in the LAP3’ (TNO, 2023).

[Section 2.6.3 ‘Critical materials and high dignity’] of the CMP recycling chapter provides more information on critical materials in relation to waste treatment.

15.2 BREF in relation to minimum standard

The minimum standard complies with the BAT reference documents (BREFs) drawn up under the Industrial Emissions Directive (IED) and previously under the IPPC Directive included in the IED. The report [report] shows the outcome of this review.

This test will be carried out once the minimum standards have been established. This is only after the public consultation on the draft waste plan has been processed.

15.3 Mention of the source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022a). *Concretizing conditions that prevent recycling as aminimum standard*.
- RoyalHaskoning DHV (2022b). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- RIVM (2024). [*SVHC in chain plans*].

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

For paper and cardboard, the following developments may be relevant to this chain plan:

Post-separation of paper and cardboard

For this chain plan, a studyhas been carried out on the recycling options for paper and cardboard that can be post-separated from construction and demolition waste, residual waste from households and offices, services and shops (KWD) and cellulose from sewage treatment plants, and that is no longer suitable as a fibre raw material for new paper/cardboard production. This study identified a number of promising processing techniques. However, many companies that have in-house technology to incorporate post-separated paper and cardboard as input material do not currently have the focus on (post-separated) paper and cardboard.

There are companies that work with source-segregated paper and cardboard, paper sludge or primary materials as input materials, which could potentially also use post-segregated paper and cardboard.

Due to the lack of a pre-existing market, there is little understanding of:

- the quality of post-separated paper and cardboard from the residual streams and; • the quality requirements that processors apply to post-separated paper and cardboard;
- in the quality required for the marketing of the secondary products.

This has yet to develop, making it difficult to assess the real potential of this market at this point in time. For the CMP, it is therefore not realistic to set a minimum standard for post-separation of paper and cardboard and a requirement for post-separation of waste paper and cardboard from mixed waste. As part of this, investigations will be carried out in the coming period.

National Circular Economy Programme

The NPCE indicates the need to prevent the incineration or landfilling of recyclable materials. This requires a targeted set of measures to close a specific material chain. One of the wastes specifically mentioned is paper and cardboard. Each material will be used to combine targeted actions throughout the chain. Measures explored include increased separation, post-separation and/or sorting obligations, collection requirements, certification of sorting processes, promotion of marketing, financial incentives, and (increase of) mandatory recycling rates through EPR. In the long run, an additional lock on the door may be closed in the form of a material-based incineration prohibition.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Textile chain plan

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

Status: Circular Materials Plan draft for public consultation

Sender: Ministry of Infrastructure and Water Management

Date: January 2025

Website: circulaire materials plan.nl

Home > Materials > Textile chain plan

Textile chain plan

This chain plan provides businesses and authorities with knowledge of the textile chain. In addition, the competent authority provides assessment frameworks for granting waste treatment permits and cross-border textile shipments.

Synopsis

The first part of the chain plan describes the textile policy and objectives. It also provides businesses and public authorities with guidance on the choices that can help make the chain circular. It provides information on which legislation is relevant and which authority supervises this matter. The focus points for assessing whether the material is, or must remain, legally a waste material are also included.

The second part of the chain plan contains the assessment frameworks for authorising the processing and cross-border transport of textiles as waste. Competent authorities should take these assessment frameworks into account when making decisions. In addition, it provides an explanation of the assessment frameworks and additional information for taking decisions on the processing or cross-border transport of these wastes.

At the end, the future plans for this chain plan were described, both for the first part on the chain and for the assessment frameworks in the second part. For more information on the different chain and waste plans, please refer to [materials].

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Future plans

Knowledge of the material chain

This chain plan is intended for parties in the textile chain. From design, production and use to waste processing and re-use of materials in products. It is also aimed at policy-makers, permit providers and regulators along the chain, such as provinces, municipalities, ILT and environment services.

It covers textiles, including footwear. Textiles are: consumer and corporate clothing and footwear, table, bed and household linen, large-scale fabric and curtains, uniforms, as well as unsold clothing or footwear. This chain plan does not cover furniture, mattresses or carpet. See the relevant waste plans for this.

This section first provides an overview of the main public policies and current objectives for textiles. This is followed by an overview of the chain and the key parties involved in the chain. It then explains what is meant by a circular chain and, for each chain stage, details the choices that chain parties can make in order to contribute to it. It explains the relevant legislation and the authority that oversees it. The final paragraph then explains points of attention for the legal distinction between waste and non-waste in the textile chain.

1. Policy and objectives

Policies to achieve a circular economy are set at EU and national levels. This section sets out the main relevant policy programmes and (legal) objectives.

1.1European Union Policy

The textile policy is set out in the European Textile Strategy. It is also the Waste Framework Directive (WFD) (Directive 2008/98/EC) is an important European framework for the waste phase of textiles. For the front of the chain, the Ecodesign for Sustainable Products Regulation (ESPR)(Regulation (EU) 2024/1781) is important.

1.1.1 European Textile Strategy

In 2022, the European Commission (EC) published the European Textile Strategy. It proposes the following goals:

- All textile products are sustainable, reparable and recyclable; mostly made from recycled fibres; free of hazardous substances; produced with respect to humans.
- Consumers can use their clothes for longer because textiles are made of high quality. Fast fashion is out of fashion.
- Profitable reuse and repair services are widely available.
- Producers in the textile sector take responsibility for their products in the textile chain. The textile sector is competitive, resilient and innovative.
- Circular clothes instead of single-use clothes are the norm, with sufficient recycling capacity and minimal combustion and landfilling.

Among other measures, the EC has proposed the following measures to achieve these goals:

- European Extended Producer Responsibility (EPR) via the WFD. See also [Section] 1.1.2 ‘Waste Framework Directive (WFD)]
- Draft requirements for textile producers via the ESPR. See also [Section 1.1.3] ‘Ecodesign for Sustainable Products Regulation (ESPR)’]
- Prohibition of destruction of unsold stocks and returned textile products.
- Eliminating inaccurate claims about environmental aspects of products to reduce greenwashing.
- Preventing illegal exports of textile waste.
- Prevention of microplastic pollution.
- Information requirements through a digital product passport and a textile sustainability label that informs consumers about the sustainability and circularity of a textile product.

1.1.2 Waste Framework Directive (WFD)

The current WFD requires all EU Member States to collect textiles separately from 2025 (Article 11(1) WFD). On 5 July 2023, the European Commission presented a new proposalto revise the WFD. This proposal also covers textiles. This includes the introduction of extended producer responsibility (EPR) for textiles in all Member States in the European Union. This makes producers responsible for the ‘polluter pays’ principle for the management of textile waste. In the Netherlands, an EPR already applies, see for more information [section 1.2.3 ‘Extended producer responsibility’].

On 17 June 2024, the Council of the European Union adopted a positionon this proposal. At the time of writing, it is not yet certain what form this proposal will eventually take into an amended WFD.

1.1.3 Ecodesign for Sustainable Products Regulation (ESPR)

Under the European Eco-design Regulation for sustainable products, it is possible to introduce design requirements for specific product groups. Appropriate requirements for improving the longevity and circularity of the product will be defined for each product group. The ESPR also stipulates a ban on the destruction of unsold stocks of textiles and footwear. Textiles are the first product group for which design requirements are being developed in the coming years. For example, requirements can be set on the service life, recyclability and minimum mandatory percentage of recyclate.

1.2Dutch Government Policy

The Dutch policy is set out in the National Circular Economy Programme. In addition, there is a specific policy programme for circular textiles. Finally, the national legislation on extended producer responsibility for textiles sets targets for reuse and recycling.

1.2.1 National Circular Economy Programme (NPCE)

The National Circular Economy Programme (NPCE) sets out objectives and measures to ensure that the Netherlands is circular by 2050. Textiles are one of the priority product groups of the NPCE. The policy on achieving circular textiles is set out in the circular textile policy programme.

1.2.2 Circular Textiles Policy Programme 2025-2030

The Ministry of Infrastructure and Water Management has outlined its plans for a circular textile chain in its circular textile policy programme. The programme's objectives in 2030 are:

- Reducing raw materials: the number of new items of clothing purchased per person per year has decreased to an average of 35 items.
- Substitution: at least 50 % of sustainable material is processed in all textile products sold on the Dutch market, of which at least 15 % is *post-consumer* fibre-to-fibre recyclate.
- Extending the lifetime of a product: the share of second-hand textile products in relation to the number of newly bought products is at least 25% (including sales via online platforms). The number of repaired textile products is rising.
- High-quality processing: the quantity of textile waste generated, kg/per capita/per year, has fallen to 10 kg.

In addition to its objectives, the programme includes several policy measures, for example in the area of reducing production and consumption. The policy programme is monitored annually. More background information on this policy, its objectives and the annual monitoring report of the policy programme can be found on theTextiles website.

1.2.3 Extended producer responsibility (EPR)

Extended producer responsibility (EPR) means that producers and importers are financially and often also organisationally responsible for the waste management of the products they place on the market. The ExtendedProducer Responsibility Decreelays down general obligations. In addition, additional legislation exists for specific products.

In 2023, the Extended Textile Producer Responsibility (EPR) scheme was introduced in the Netherlands with the Extended Textile Producer Responsibility Scheme. The RPV makes textile producers responsible for the collection, reuse and recycling of their products. The EPR currently applies to consumer clothing, corporate clothing and household linen. Producers are obliged, among other things, to communicate how consumers can dispose of their textile products properly again. Producers are legally bound by the RPV to annual increasing targets.[88] The objectives for 2030 are as follows:

- In 2030, 75% of the textile products placed on the market are reused for product or for recycling. Of these, at least 25% are prepared for reuse, the remaining 50% can be achieved through recycling or preparation for reuse. At least 15% of the volume prepared for re-use is for re-use in the Netherlands.

88Government Gazette 2023, 132   Overheid.nl > Official announcements (officielepublicaties.nl) and scheme: wetten.nl - Regeling - Extended Producer Responsibility Scheme textiles - BWBR0048299 (overheid.nl).

- 33% of the recycled content is recycled fibre into fibre. This is recycling in which textile products that have become waste are processed so that textile fibres are reapplied in materials for clothing and household textiles.

2. Supply chain and chain parties overview

A chain consists of several stages: design, production, use and processing. This chapter provides an overview of the different textile chain stages and the main parties involved.

Figure 1: Design, production, use and processing chain stages

Draft

Textiles include, for products such as clothing, linen and home textiles (which are the subject of this chain plan), but also other products such as furniture or carpet (which is not the subject of this chain plan). At the design stage, important choices on both the use of and requirements for textiles are determined by the designers and producers. The draft determines whether it

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It can be long-lasting because, for example, it has been made of high-quality material and can be repaired. The draft also determines whether the product can be properly recycled.

Manufacturing

In the textile sector, there is no single party that makes a product. There are several actors, such as clothing brands, raw materials and material suppliers, manufacturers and retailers, who all make choices in the production chain.

The production of textiles starts from the extraction and production of raw materials and auxiliaries. The materials are made up into yarns and then woven into cloth. Cotton and polyester, and to a lesser extent polyamide, viscose and wool are the most commonly used materials for textiles. The so-called man-made fibers represent a growing share of the materials used. These are polymerised plant materials, such as viscose made of wood fibres, so-called semi-synthetic materials. Yarns, cloth, and eventually textile products are made from organic or (semi-)synthetic materials. The production process typically uses water, chemicals and energy at all stages.

The textile manufacturing sector has largely disappeared from the Netherlands and almost completely in the clothing sector. While most of the cotton is grown in China and India, the United States and Brazil are also large producers[89]. The production of clothing and other textiles is mainly carried out in China, Turkey, Bangladesh and India. The main reason for this is that it is cheaper to produce there. Between 2000 and 2014, global clothing production doubled to more than 100 billion items of clothing produced in a year[3]. In 2020, the textile consumption of one average person in the European Union required 400 m^2 of land area, 9 m^3 of water and 391 kg of raw materials[90].

Textiles are distributed in the Netherlands through agents and procurement companies and subsequently via (online) retailers. Clothing firms (online and physically) buy the manufactured clothes directly from the manufacturers in the various countries or through Dutch or foreign importers and agents. According to CBS, a total of 50 000 companies are active in fashion in the Netherlands, such as wholesalers, shops, repairers and lessors. The total Dutch market in clothing is estimated at €10 billion, including €1 billion in corporate clothing. In 2020, the Netherlands imported €12.4 billion in clothing. The Netherlands is the fifth largest garment importer in the EU. Clothing comes mainly from China and Germany, followed by Bangladesh, Turkey and Belgium[91]. The transparency of supply chains has become increasingly limited by the fact that production takes place in far-reaching countries and that more actors are active in the textile chain, making more links in the chain.

Use

Textiles are used in a variety of applications by consumers, organisations, the service sector and companies. It is used mainly for clothing, but also for linen, bedding, home decoration and upholstery. In addition, textiles are used for other applications, such as (car) insulation material and cleaning valves.

Between 2000 and 2014, clothing purchases per capita in the world increased by 60%, while clothing is kept for an average of half a long time[92]. This broad trend is reflected in the Netherlands, where the average consumer purchases 46 new items of clothing each year and throws 40 items of clothing[93]. The second-hand clothing market is also growing every year. Between them, Dutch consumers trade 8 kt of textiles in 2022 via platforms such as Vated and Marketplace. This amounts to 0.5 kg per inhabitant. This is a strong growth rate compared to 0.92 kt in 2018[8]. On average, the Dutch spends 4.6% of their total household spending on clothing and footwear[94].

Consumers remove clothes when the clothes are broken, if they no longer fit, because they have been de-fashion or because space in the cupboard is needed for new clothes. Companies discard textiles such as when it is broken, when it is no longer functional, or when the clothes need to be marked with another company logo.

Processing

In 2022, around half of the discarded textiles were disposed in residual waste. Textiles that are disposed of separately are collected and sorted into two categories:
reusable textiles and recyclable textiles. Re-usable and recyclable textiles are partly disposed of in the Netherlands and mostly abroad. Some of the textiles collected in the Netherlands are traded to third countries in, for example, Africa or Asia after sorting (in the Netherlands or elsewhere within the EU). It is sold or recycled as a second-hand textile.

The Netherlands is one of the top 10 exporters of second-hand clothing in the world[95]. In 2022, 248 000 tonnes of used textiles were exported from the Netherlands[96]. This is in line with EU textile exports – which increased from just over 550 000 tonnes to almost 1.7 million tonnes[12] between 2000 and 2019. In 2022, exports of second-hand clothing from the Netherlands totalled

89 https://www.statista.com/statistics/263055/cotton-production-worldwide-by-top-countries/ [3] McKinsey & Company. Style that's sustainable: a new fast-fashion formula.

90 European Parliament (2023). The impact of textile production and -waste on the environment.

91 Fashion industry statistics Netherlands (fashion industry.nl)

92 McKinsey & Company. Style that's sustainable: a new fast-fashion formula.

93 Maldini, I., Duncker, L., Bregman, L., Piltz, G., Duscha, L., Cunningham, G., Voges, M., Grevinga, T., Tap, R., & van Balgooi, F. (2017). Measuring the Dutch clothing mountain: data for sustainability-oriented studies and actions in the apparel sector. [8] Monitoring the circular textile policy programme 2022.

94 Fashion industry statistics Netherlands (fashion industry.nl)

95 UN COMTRADE (2022). EU-28 2020 data for HS 6309. Used textiles and used clothing.

96 UN COMTRADE. (2022) (combined volumes of HS6309 and HS6310 exports from the Netherlands to the world) [12] European Environment Agency. (2023). EU exports of used textiles in Europe's circular economy.

more than €193 million, the highest export value of the last five years. With an average European price for used textiles of €0.76 per kilo in 2019, this indicates a significant volume exported[97].

The study‘Used textiles from the Netherlands Destinations, uses and risks’ identifies environmental and social risks. Exports provide employment and access to affordable clothing in destination countries. At the same time, it appears that second-hand clothing shipped to African countries may not always be suitable for re-use there. On the spot, some of the clothing will immediately after its arrival disappear to (illegal) landfills or be incinerated in the open air. This also leads, for example, to emissions of microplastics and chemicals. In addition, social risks are associated with the mostly informal textile processing, such as unsafe working conditions, lack of living wage, debts and power imbalance between chain partners.

After sorting for reusability and recyclability, a third stream, the residual stream, remains. The residual stream is composed of residual waste or wet and contaminated textiles that are not reusable or recyclable. This residual stream is processed in the Netherlands, often in a combustion plant.

The current recycling of textile waste mainly generates cleaning cloths, pressed fibres and insulation materials for cars. The recycling market is developing strongly to incorporate recycled materials into new textiles. For more information on current textile processing, please refer to theMass balance 2022.

3. Circular economy choices

The National Circular Economy Programme (NPCE) indicates that the objective of the transition to a circular economy is to achieve economical and safe use of raw materials. The programme describes four steps to make resource use more circular:
reducing the use of raw materials, substituting raw materials with secondary raw materials and sustainable bio-raw materials or raw materials with a lower environmental impact, extending their lifetime and finally achieving high-quality processing.

In order to achieve a circular economy, each step must contribute and each chain party must adapt its circularity strategies. It is not just about good design or recycling. Each step in the chain influences a subsequent step. Circularity therefore extends along the entire chain from design, production of raw materials, materials and products.

use including maintenance and repair to waste treatment and high quality application of recycled materials.

This means, inter alia, that textiles are designed for circularity. And that it is produced with clean energy and with the least harmful substances possible. It is also important that textiles are well maintained and used for as long as possible. Textile products must be easy and safe to recycle at the end of their service life and their materials must be as high-quality as possible, i.e. fibre to fibre. Proper textile collection and sorting is also important for this purpose.

The following paragraphs explain, for each step, the choices that stakeholders can make in order to help create a circular economy, so that raw materials remain available and affordable. It explains the legislation that is relevant in this regard. Finally, attention is paid to when a material is legally waste or not.

Figure 2. Choices in each chain stage

97 Köhler, A., Watson, D., Trzepatiz, S., Löw, C., Liu, R., Danneck, J., Konstantas, A., Donatello, S. and Faraca, G. (2021). Circular Economy perspectives in the EU textile sector. EUR 30734 En, Publications Office of the European Union, Luxembourg.

4. Draft

Textile designers play an important role in a circular textile chain. Circular textile designers need to work in a circular way to produce circular textiles. This means choosing circular material use and designing safe textile products. In a circular textile chain, designers are in contact with all the links in the chain, such as recyclers, to ensure that discarded textiles can be used in new textile products. The ESPR will therefore oblige manufacturers not only to meet circularity requirements for textiles, but also to share information in the digital product passport, which can be accessed by all links in the chain.

Figure 3: Choices at the design stage

4.1Circular material use

In order to obtain circular product chains, everyone in the chain must have an interest in maintaining the value and quality of products and materials. Of course, this depends on many factors. The design of a product is one of the basic conditions for this.

Long service life and reuse are possible only if the product can be repaired and replaced as broken parts such as zips and buttons. High-quality textile recycling is more difficult when many different materials are used in one product.
The [Circular Material Use Chapter] sets out general design principles.
These are presented below and, where possible, made specific to textiles.

1. Do not produce or buy anything that is not necessary:

Overproduction of textiles, where more textiles are produced than consumed, does not fit a circular economy. Consumers only buy what they need. Producers only produce what consumers need.

2. Design and produce with less material

In a circular economy, the manufacturer minimises the use of materials.

3. Design and produce with renewable raw or secondary materials

Use recycled textiles in new textile products. Avoid using virgin fossil-based materials. Designers only use fossil raw materials such as polyester, acrylic and nylon when these are recycled or bio-based. The use of materials such as lyocell, tencel, flax and hemp is encouraged.

4. **Design and produce for optimal service life**

The products are made in such a way that they can last for a long time and are easy to reuse and repair. This can be done by choosing durable materials of good quality.

5. **Design and produce for high-quality recycling**

Clothes made of many different materials (blends) are difficult to recycle. Furthermore, rubber labels and elastic properties can make recycling more difficult. Designers know what is and is not possible in terms of recycling by engaging with recyclers.

6. **Do not use healthcare substances**

The Netherlands and the European Union are working on the transition to a non-toxic circular economy. That is, the application of care substances is limited to those necessary for the production or functionality of a product or beneficial to the life-cycle (reparability) of a product or to the quantities of raw materials required for a product and that the emissions of care substances are avoided or minimised throughout the product chain (production, use, recycling). For textiles, think about chemicals used in textile production, as well as impregnating agents and preventing the release of microplastics.

7. **Use in production of circular auxiliaries and renewable energy**

In addition to the textile product, production should preferably be circular and sustainable. Keep in mind the minimisation of cuttings and the minimal use of raw materials, energy, water and machinery.

8. **Consider the waste management stage beforehand**

As a designer or producer, ask how the textile product you are making can ultimately be used, reused and recycled to the highest quality.

For textile products, different product and substance legislation may apply.
For general care substances, the REACH Chemicals Regulation (Regulation (EC) No 1907/2006) and the POP Regulation for persistent organic pollutants (Regulation (EU) 2019/1021) are relevant. More information on the legislation governing substances of concern can be found in the chapter [SVHCs and other substances of concern]. Section [13.3 Substances of very high concern (SVHCs) and other substances of concern] of this chain plan includes more on substances of concern in textile waste.

For textiles, the product safety legislation of consumer products is also relevant. This consists of the European General Product Safety Regulation (Regulation EU 2023/988) and the Dutch Commodities Act and Commodities Act Decrees. In addition, requirements for sustainable design are being introduced under the European Ecodesign Regulation for Sustainable Products. For more information, see [Section 1.1.3 'Ecodesign for sustainable products (ESPR) Regulation']. The Netherlands Food and Consumer Product Safety Authority (NVWA) and the Human Environment and Transport Inspectorate (ILT) monitor the above legislation. More information can be found on the NVWA webpage on clothing and textiles.

4.2Product information for maintenance and recycling

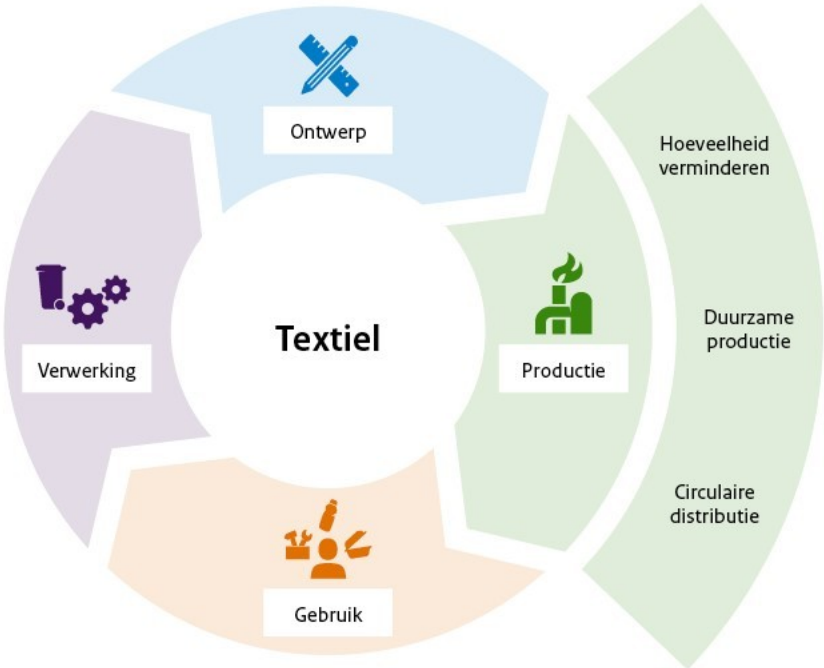
It is important for all the actors in the circular textile chain that companies in the textile chain make the various steps in the production process and the final product transparent. For recyclers, it is important to know exactly which materials textile products consist of. But consumers also benefit from information on how to maintain their clothes in the best possible way. However, this information is not sufficiently useful for recyclers. Under ESPR, see [Section 1.1.3 'Ecodesign for Sustainable Products (ESPR) Regulation'], a digital product passport is required. Textiles are one of the first product groups exploring the use of a digital product passport. This product information will be included. Designers and producers can pre-sort this by making this information available earlier.

Currently, there is already a European legislation on labelling of textiles and footwear. The Textile Regulation (Regulation (EU) No 1007/2011) lays down textile fibre names, labelling and fibre composition of textile products. The European Commission launched an initiative to revise this regulation in 2023. For example, mandatory information on the sustainability of a textile product could be added in the form of a sustainability label. For footwear, there is the Directive on the labelling of the materials used in the main components of footwear (Directive) 94/11/EC). This Directive has been implemented in the Netherlands in the Commodities Act Decree textile products and in the Commodities Act Decree on labelling of footwear.

5. Manufacturing

Textile manufacturing starts with the extraction and production of raw materials and auxiliaries. The
Materials are made up into yarns and then woven into cloth. Textile producers have a significant impact on the environmental impact of textiles. Indeed, the production phase has the most environmental impact of all chain phases. The production of the substances (such as cotton) consumes the most water.[98] A lot of CO_2 is also emitted during the yarn spinning process. Of the entire production process, the dyeing and finishing stages of a textile product are the most polluting ones[99], consuming a lot of water and emitting the most CO_2. Textile products release substances harmful to the environment. For example, the 'wet process steps' of the textile chain, such as bleaching, dyeing and finishing, have particularly high chemical consumption.

Figure 4: Production Phase Choices



5.1Reduce quantity

The first circularity strategy is to reduce the use of raw materials. This is about using less (primary) raw materials, but also about reducing them by refraining from producing or selling less products. For example, by using clothes instead of sharing, exchanging or renting or buying second-hand equipment. For a circular textile chain, it is in

In any case, it is important that all parties in the production phase produce or cause to be produced high quality materials and textile products that last for a long time.

Clothing brands produce sufficient and not too much to prevent overconsumption by reducing the number of new collections and switching to different business models. Clothing brands and retailers thus avoid unsold supplies. One way to achieve this is to produce on the basis of demand, which limits overproduction. Unsold stock that would nonetheless arise would have to be processed at least according to the [minimum standard] for textiles. It is preferable to sell and dispose of these stocks, possibly in a later season.

Under the ESPR, it will be possible to introduce design requirements for specific product groups. For example, requirements can be set on the service life, recyclability and minimum mandatory percentage

98The Policy Hub. Measures.

99Hedgehog Company. The environmental impact of the textile sector.

of recyclate. In addition, the ESPR regulates a ban on the destruction of unsold supplies of textiles and shoes. This should lead to producers better matching supply and demand of products and reducing the amount of clothing they put on the market in order to avoid unsold stocks.

5.2Sustainable production

Circular businesses must have knowledge of the environmental impact of the raw materials and consumables they use. In their production chain, they take measures to reduce this environmental impact.

Manufacturers use as few primary raw materials as possible, fresh water and harmful chemicals, and use renewable energy such as wind or solar power.
Manufacturers minimise (cut) waste and, nevertheless, re-apply it to new products.

Clothing brands, together with their suppliers, lead to transparency throughout the entire chain. This means that they are clear about where the textile products and the raw materials used are from and who made the textile product. Of course, apart from the environmental impact in the textile chain, the social themes for people working across the textile chain are relevant. Key themes in these international chains are child labour, forced labour, freedom of trade union, discrimination and gender, living wage and safe and healthy workplaces.

In relation to the environmental themes, animal welfare is relevant for businesses in the textile sector. Dutch businesses must comply with the Wet dieren (Animals Act). The Animal Welfare Council's vision for 'Animal Welfare' is that an animal husbandry system provides the animal with an environment that guarantees the following six guiding principles: recognition of the intrinsic value and integrity of the animal, good nutrition, good environment, good health, natural behaviour and positive emotional state. This view has been used as a substantive starting point for the Agreement on Animal Welfare. In addition, new legislation and regulations are being developed based on the outcomes of this Covenant. At the time of writing, this new legislation was not in force.

For International Corporate Social Responsibility (IMVO), binding legislation is on the rise. The obligations cover social and environmental aspects in the chain. The key legislation for IMVO is the Business Due Diligence Directive onsustainability(CSDDD), the Corporate Sustainability Reporting Directive(CSRD) and the *Sustainability Disclosure Regulation in the*financial services sector (SFDR). The monitoring of reporting obligations is carried out by the Financial Markets Authority (AFM). These reporting obligations have different implications for companies in the textile and fashion industry. Companies will need to make public how their business activities affect the environment, society and management. For example, companies will have to report on CO2 emissions, transparency in supply chains and working conditions. As a result, fashion and textile brands are increasingly monitored and held accountable, forcing them to develop and implement a sustainability strategy.

In the Netherlands, the rules in the Living Environment Law (Activities) Decree (Bal) apply to production processes. This includes, for example, reducing emissions of substances of very high concern and waste prevention. It depends on the activities that are carried out by the company.

Production companies and shops in the Netherlands must at least separate their waste. See the [section on keeping corporate and hazardous waste separate].

5.3Circular distribution

Also, in retail sales via shops and online retail, much is possible to reduce the environmental impact and make the chain more circular:

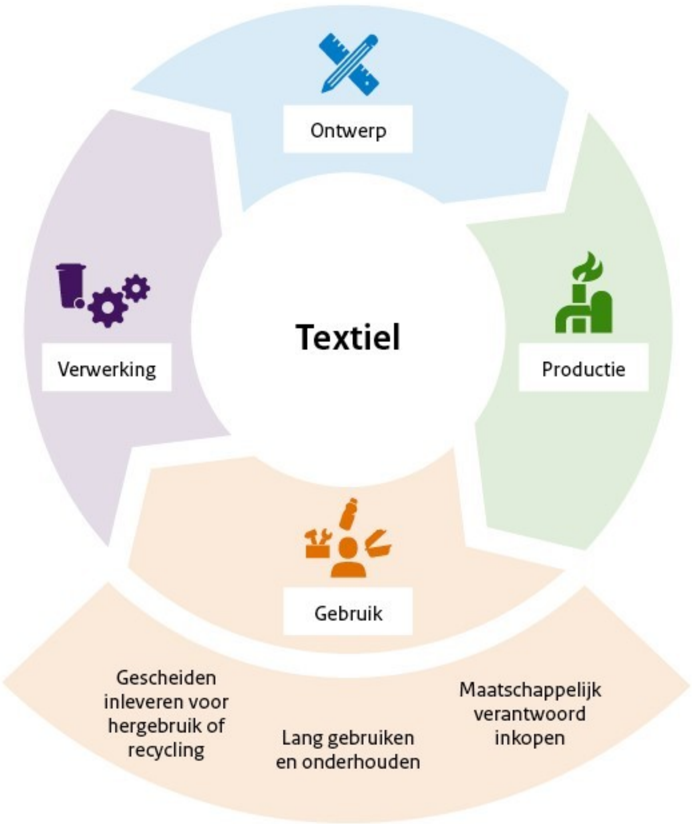
- Shopkeepers are leading the consumer into a different, more sustainable purchasing and use behaviour. (Online) retailers offer second-hand clothing previously used in their shops and/or rent it.
- (Online) retailers minimise sales and exclude phenomena such as Black Friday or Cyber Monday.
- Online retailers buy returns free of charge and use reusable packaging to send their sold products.
- Retailers and clothing brands create circular services such as (free of charge) repair or rental and lending of clothing as part of their business model.
- Fossil products are no longer advertised.

A number of changes have been made to EU Directives related to consumer rights to improve circular behaviour by producers, traders and consumers.
The Consumer Empowerment Directive for the green transition (Directive (EU)2024/825) sets out obligations for traders on voluntary sustainability claims and the use of labels. It also covers information on the legal and commercial guarantee periods, product repair options and the minimum period during which the manufacturer or provider makes software updates available. This will be included in the Unfair Commercial Practices Directive (Directive EC/2005/29). The Common Repair Incentives Directive (Directive (EU) 2024/1799) requires Member States, among other things, to set up a national platform to make it easier for consumers to contact suitable repairers. In the Netherlands, this is the reimbursement register.

6. Use

How textiles are used has a significant impact on the product's environmental impact. Consumers and businesses can choose to contribute to a circular textile chain. Such as good quality textile products, second-hand procurement, long-term use and repair when necessary.

Figure 5: Use-phase choices



6.1Socially responsible procurement

Buying parties have an influence on the textile market. They can set requirements and have wishes taken into account in determining the best and most circular offer. This can include circular design requirements for textile products, but also reduced new purchases, second-hand offers and maintenance life extension.

Through its Socially Responsible Procurement Manifesto (MVI), the government is encouraging circular procurement by businesses and local authorities. This means that purchasing parties set requirements on the environmental impact, lifespan, repair and recyclability of textile products. A category plan for the purchase of corporate clothing has been drawn up by the national government. Public purchasers may also participate in Buyer Groups. For textiles there is a buyer group Boaclothing. This provided a market vision document, which included a guide for public buyers on how to purchase Extraordinary Investigators (BOA) clothing as sustainably as possible, and for suppliers on the sustainability ambitions of purchasing parties. The manual also contains valuable information for buyers of other clothing items. Purchasers can also use the MVI-criteria tool. The tool offers ready-made sustainable procurement criteria for all types of products, including textiles.

Businesses and local authorities, as well as consumers, are in the first instance considering whether or not to:
Minimising (re)purchases. A circular chain always first examines whether they can (re)purchase second-hand textiles and use products for longer. Companies trading in second-hand textiles can respond by offering second-hand textiles in large quantities. In recent years, the demand for and supply of second-hand clothing have increased. Through the MijnStyle iD campaign, the government is promoting the purchase of clothes that match everyone's own style. The campaign focuses on buying clothes that really suit you, so that consumers are consciously less likely to (mis)buy.

6.2Long-term use and maintenance

In a circular economy, consumers not only purchase second-hand clothing more frequently, they use it longer and have it repaired or repaired themselves more frequently. Furthermore, the washing of your clothes is less frequent and less hot.
Local authorities can respond by encouraging repair shops and second-hand clothing shops in towns and villages.

Companies and co-governments may conclude contracts with textile service companies. They buy textiles for the lots and wash and maintain them. These service centres are efficient in their processes, reducing the environmental impact per garment. There are also textile service companies that target the consumer market.

6.3Return separately for reuse or recycling

The Dutch policy aims to maximise the reuse of textiles in the Netherlands. Through separate collection, usable clothing and other textiles are sorted for reuse. In 2018, 305.1 kt of textiles was discarded in the Netherlands. 53% of the separately collected textiles (44.6%) were reused (mainly abroad) and 33% recycled (mainly as insulation material in the car industry and as cleaning cloths).

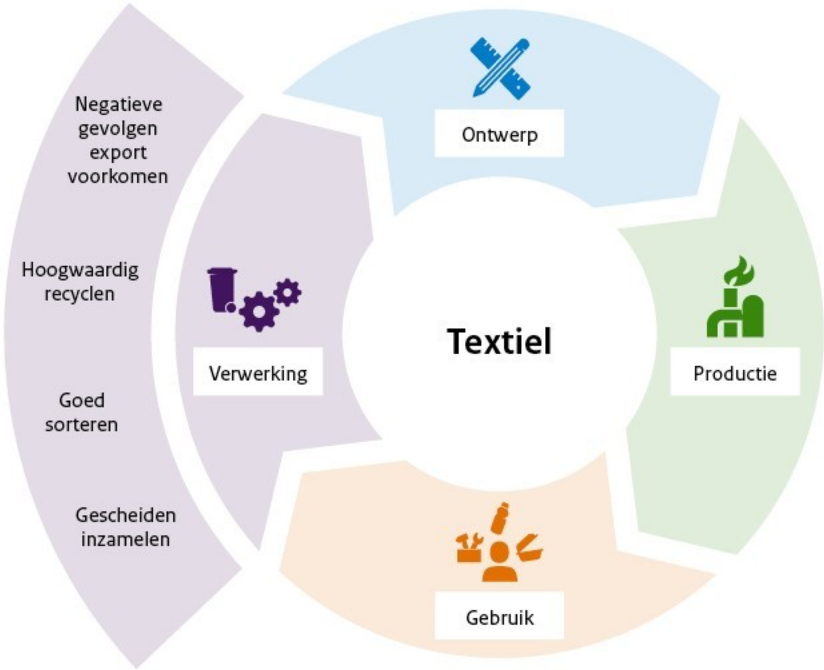
In order to work circularly, consumers, businesses and public authorities use textile products for as long as possible. If they want to get rid of them, consumers can exchange clothes or give them to family or friends. Or selling through different reuse platforms or returning them to a second-hand or second-hand store. If not, they deliver it separately from other waste at textile collection points. Such as the shop owner where they bought the document, the second-hand store or second-hand store, or the municipal textile bin. It is nationally determined what can and cannot be returned to a textile tray. See also the textile list in the [waste separation list]. Broken or worn textiles may also be in the textile tray, for example.

Households comply with the waste separation rules set by their municipality in the Waste Ordinance or the environment plan. Businesses thank their textile waste separately in accordance with the waste separation rules in the Living Environment Law (Activities) Decree (Bal). See [section on separate collection of business and hazardous waste]. They also deliver their unsold textile stocks (if they are still in the process and no better application is available).

7. Processing

Collectors, sorters and recyclers have an important role to play in preserving the textile raw materials at the end of a textile product's life. By collecting textiles separately with the least pollution possible, textiles can be reused or recycled as much as possible. Sorters sort textiles for both reuse and recycling. Recyclers produce good-quality textile recyclate that can be re-used in textile products.

Figure 6: Use-phase choices



7.1Collection of textiles

Separate collection of textiles is important for the extent to which textiles can be reused or recycled. All European Member States are required to collect textiles separately from 2025 (Art. 11 WFD). In the Netherlands, this obligation is included in the Decree on separatecollection of household waste. Most municipalities in the Netherlands comply with this requirement by having textile containers and facilitating their emptying. Municipalities must also facilitate textile collection at collection points (Article 4.623 Environmental Activities Decree). Since 1 July 2023, with the introduction of the RPV for textiles, producers are responsible for the collection of textiles. To this end, producers make agreements with municipalities, thrift shops and collectors so that enough discarded textiles are collected separately to achieve the objectives (see also section 1). Shops are also free to collect textiles themselves.

It is important that all textile collectors use the same collection criteria, so that the quantity of textiles collected is large and the pollution is minimised. For a circular chain, it is therefore important that collectors use the national textile list. For example, many consumers do not know that broken and worn textiles can also be made in the textile tray and textiles with paint spots are not. At present, almost half of all textiles are discarded in the residual waste and incinerated.

The quality of the collected textiles is important for more reuse and recycling. Collected textiles are not always directly sorted. Wet or soiled textiles may then become textile fibres or pollute other textiles. In addition, wet fibres cannot be easily separated for recycling. With this, wet and soiled textiles disturbs it processing. The better the separate collection, the better the quality of the textiles, leading to better reuse and recycling opportunities, and the less waste streams need to be incinerated. The quality of discarded textile waste is therefore one of the priorities of the VANG Household Waste programme. The HandbookSteering thetextile chainprovides guidelines for municipalities to focus on quality.

Tabel 1: Textile/Non-textile list – textiles that can be presented separately in a closed plastic bag

Type	Yes	Not
Overall	All textiles in the categories below, even if worn or broken	Textiles soiled and oil or paint contaminated; Household waste
Clothing	Such as: trousers, skirts, dresses, ties, shirts, hats, caps, jackets, coats, hosiery, underwear, pyjamas, socks, neckties, jumpers, T-shirts, swimwear, vests	*No specifically appointed cases*

Footwear	Such as: gylons, boots, sandals, sports and trekking shoes, where possible combined in pairs	*No specifically appointed cases*
Bed linen	For example: duvet covers, pillowcases, sheets, blankets	Mattresses, duvets and pillows
Residential textiles	Such as: curtains and net curtains, towels and washing mitts, hugs (clean), flaps larger than 25X25 cm, cleaning cloths, napkins, tablecloths, tea towels	Carpet, mats, floor coverings; Flaps of less than 25X25 cm, flashing residue, knitting yarn, bulbs of wool, filling material
Accessories	For example: bags and belts	*No specifically appointed cases*

7.2Sorting of textiles

The separately collected textiles are collected and taken to a sorting centre in the Netherlands or abroad. For a circular textile chain, it is important that the separately collected flows are appropriately sorted and placed in the right place for processing. In the minimum standard (see section 6.2), sorting for reusable and recyclable textiles is therefore a mandatory step in the processing of textile waste in the Netherlands. This means:

- Sorters need to sort the reusable fraction of a fine-meshed size in order to better know the textile products they place on their customer premises. This way, sorters prevent customers from buying products abroad that they cannot use and therefore end up in waste there.
- Sorters should sort the recyclable fraction by colour and material types as much as possible so that they can provide recyclers with sufficient material to be recycled.

Sorting companies must comply with the rules in the Environmental activities decree [Bal] for corporate waste.

7.3 Recycling of textiles

In a circular textile chain, textile waste is recycled to the highest possible quality. A high-quality way of recycling is fibre-to-fibre so that recycled textiles can be used in new textile products. However, recycling also needs to be safe. By understanding the composition of textile products and phasing out harmful chemicals, textiles can be safely recycled and reused as recyclate.

Recyclers must comply with the rules in the Living Environment Law (Bal) Activities Decree and the assessment framework for high-quality processing in the CMP (see the second part of the chain plan). Currently, all types of recycling are allowed. Consider recycling to cleaning cloths, insulation material or new textile fibres. Through extended producer responsibility, producers are responsible for ensuring that textiles are prepared for re-use and recycled. This is achieved through the establishment of legal objectives. One of the objectives is fibre-to-fibre recycling.

7.4 Export of textiles

In a circular chain, the reuse and processing of textiles abroad is also important. Indeed, the textile chain is often not limited to national borders, for example because production is not taking place in the Netherlands. Some parties therefore export textiles, for example for reuse and recycling, in order to close the chain.

The Ministry looks at what measures the government can take to prevent the negative effects of exports. This could include measures within the Netherlands, European regulations (e.g. via the EWSR or the WFD), cooperation with destination countries or international organisations such as UNEP.

8. Waste or non-waste

In a circular economy, materials are lost to the minimum possible extent. Safe, meaningful and high-quality applications are sought for more and more residues, used products or waste. The question of whether a material is waste or whether it should remain is increasingly asked. This is because waste handling is subject to specific rules and often also requires a specific permit related to safety for people and the environment. Furthermore, not every company can work with waste, and status is also important for (cross-border) transport.

The term ‘waste’ should be interpreted in a broad way. In principle, any substance or object can be waste if the holder discards, wishes to discard or is required to discard it. More information on how to carry out this assessment itself can be found in [section ‘Waste or non-waste’] of the CMP and the Guide waste or non--waste.

For textiles, here is a number of specific points for attention in the assessment of waste or non-waste. These points do not describe the full assessment framework.

Reuse

In order to determine whether there is reuse or waste, it is important to establish the holder’s intention with the textile. If a holder discards or wants to discard the textile or has to discard it, it is a waste. For example, where a consumer sells second-life worn clothing to provide the clothing, this constitutes reuse and does not constitute waste. Offering clothes to second-hand clothing shops or second-hand shops can also mean reuse. However, it must be the case that the store verifies the attainability to rewear the clothes when it receives them, and then accepts only clothes that are suitable. In addition, there must be a high degree of certainty that the textile can be sold again. The assessment of whether a material is waste or non-waste will require a case-by-case assessment of the waste status of the material, based on all the facts and circumstances of that case.

End-of-waste

If a holder discards or intends or is required to discard the clothing, this constitutes waste. The consignee then determines which waste treatment will follow. If, after simple operations, the product can be put back on the market, it is prepared for reuse. Examples of these operations are sorting, checking, repair or cleaning. An important point to keep in mind is that the fact that clothing will actually be worn again and again is sufficiently certain. If a textile product needs to be broken down in order to produce new fibres, it is considered to be recycling. After preparation for reuse or recycling has been completed, the conditions set out in Article 1.1(6) Environmental Management Act(WM) and [Chapter on waste or non-waste] allow an assessment of whether end-of-waste exists, based on all the facts and circumstances of the case.

Textile RPV and waste status

As of 1 July 2023, there is extended producer responsibility (EPR) for the collection, reuse and recycling of textiles. The Extended Producer Responsibility Decreetextilesregulates that producers of newly manufactured clothing and household textiles are responsible for preparing for re-use and recycling the textile products they place on the Dutch market. They must meet certain targets in the area of preparing for re-use and recycling. More information on the RPV for textiles can be found on RPV for textiles - Waste Circular.

Non-waste on the market

In all cases, when textiles are placed on the market as non-waste (either directly or after recovery or not), they must comply as a minimum with the applicable requirements.
product regulation. This includes, for example, REACH, the POP Regulation, the rules for Ecodesign and the relevant Commodities Act Decisions on product safety.

Waste assessment frameworks

This section of the plan describes how companies should process textiles and footwear, and what are the focus points. It sets out the assessment framework for the competent authority for authorising the processing of these wastes and the assessment framework for authorising cross-border transport by the Human Environment and Transport Inspectorate (ILT). Competent authorities should take into account the CMP when making decisions and therefore these assessment frameworks (Article 10.14 of the Environmental Management Act).

The primary target groups for which this plan has been written are both the companies processing or transporting this waste across borders and the competent authority that must grant permission for these activities. This authorisation is granted in an environmental permit for the processing of the waste or with a decision on a notification for cross-border transport. For the environmental permit, municipalities and provinces are the competent authority (often an environmental section on their behalf). For the notification order, this is the Minister (the ILT on behalf of the Minister).

As this is written primarily for waste management companies and the competent authority, specific technical and legal terms are used. Reading this section therefore requires a certain level of knowledge about waste legislation, the permit process and the rules for cross-border transport. For non-primary target readers who want to read more about the processing of this waste, especially the paragraphs explaining the assessment frameworks are interesting.

9. Defining assessment frameworks

The provisions of this chain plan apply to the following wastes:

Waste	Explanatory Note
Separately collected textiles and footwear from households and issued by businesses.	Textiles are: consumer and corporate clothing and footwear, table, bed and household linen, large-scale fabric and curtains, uniforms and unsold clothing or footwear.
Residues from the Dutch textile industry.	Cuttings.

A detailed explanation of the scope is provided in [paragraph 12]. Part of this is an overview of waste similar to that of this chain plan, but covered by other waste or chain plans.

10. Process quality assessment framework

In order to keep materials available for the economy, it is important to process waste in the highest quality manner possible. High-quality processing or care for people and the environment sometimes requires the separation of contaminants or the integral disposal of waste. Keeping waste separate may be necessary for the desired processing operation. The sections below address the following aspects that are relevant for authorising the processing of textiles and footwear:

• mixing permission (10.1); • the minimum standard (10.2).

10.1Mixing of waste

Mixing is designated in the Living Environment Law (Activities) Decree (Bal) as an environmentally harmful activity that requires a permit in certain cases. It covers both the mixing of waste with one another and the mixing with non-waste. Mixing within one waste category may also be subject to permit requirements.

The [Mixing permit requirement decision tree] is a tool to check whether mixing requires a permit.

10.1.1 The waste categories

The waste categories listed in Annex II to the Bal form the basis for keeping waste separate and for the permit requirement for the mixing of waste. Proper segregation of waste ensures subsequent (high-quality) processing in accordance with the minimum standard. The [minimum standard] is therefore the basis for classification in these categories.

The table below clarifies which wastes fall under which waste category.

N°	GA/NGA*	Bal waste category	Wastes covered
28	Nga	Textiles, excluding carpet	Clothing, linens, blankets, large flaps and curtains (home textiles), corporate clothing/uniforms, and unsold clothing or footwear. Cutting waste as well.
112B	Nga	Other non-hazardous waste that may not be dumped pursuant to the Landfills and Waste Dumping Prohibitions Decree [Besluit stortplaatsen en stortverboden afvalstoffen] or a minimum standard in the Circular Materials Plan [Circulair Materialenplan].	Textiles and footwear that have been found not to be suitable for eventual re-use or recycling after sorting and checking.

* ga = hazardous waste; nga = non-hazardous waste

The legal rules on how these companies should keep their waste separate are contained in [section 13.1.1 'Keeping waste separate'].

10.1.2 Mixing permission

The competent authority assesses an application for a mixing permit against the [Chapter 2.2.2 'Mixing of waste'] and the assessment frameworks set out therein.

For textiles and footwear, this plan includes the following specific provisions to be taken into account by the AACC, in derogation from the general assessment frameworks:

Cat. Bal	Allowing mixing in relation to the waste categories
28	By way of derogation from the [section 'Mixing of waste'], the competent authority cannot authorise mixing within waste category 28 of: • sorted textiles and footwear suitable for reuse; • sorted textiles and footwear suitable for recycling; and • unsorted textiles and footwear.

[Section 13.1.2] explains the concrete meaning of both the legislation and the CMP assessment frameworks for allowing the mixing of textiles and footwear.

10.2Minimum standard

The processing of textiles and footwear must be carried out in accordance with the minimum standard(s) below. This means that the competent authority may also grant a permit for higher-quality forms of processing, unless the minimum standard contains specific restrictions to this.

The competent authority can only grant a permit for the processing of the waste in a way that is lower quality than the minimum standard if
exceptional cases, such as emergencies or the presence of certain SVHCs or substances of concern. See also the [Guidance on the use of minimum standard].

The following minimum standards apply to the processing of textiles and footwear:

Component flow	Waste	Minimum standard

a	Unsorted, separately collected textiles and footwear	Sorting with the aim of separating the following fractions: 1. Textiles and footwear suitable for reuse (minimum standard b) 2. Textiles and footwear suitable for recycling (minimum standard c) 3. Textiles and footwear not suitable for reuse or recycling (minimum standard d) Re.3 'Textiles and footwear not suitable for reuse or recycling' is textiles or footwear for which reuse or recycling is, due to their nature or composition: • is not technically possible; or • for which the duration of the recycling route would be such that the costs of delivery of these batches by the disposer at the gate of the processor would exceed 265 euros/tonne.
b	Textiles and footwear suitable for reuse	Prepare for reuse.
c	Textiles and footwear suitable for recycling	• Recycling of textiles. • Recycling of (parts of the materials from which) the footwear is (has been) made.
d	Textiles and footwear not suitable for reuse or recycling (stemming from minimum standard (a))	Other recovery (e.g. primary use as fuel).

An explanation of the above minimum standard(s) in relation to high-quality processing is provided in [Section 13.2 'Explanation of high-quality processing'].

Wastes containing certain SVHCs

SVHCs may be present in the waste. Both the legislation and the assessment frameworks in the chapters [mixing waste] and [SVHC and other substances of concern] may place restrictions on the processing of SVHC-containing waste. In assessing whether a processing operation may be authorised, the competent authority will also take these chapters into account. [Section 13.3 of this plan] provides more information and an overview of SVHCs that may be present in the waste.

11. Cross-border transport assessment framework

The assessment framework below is based on the [section 'Cross-border transport']. It contains the general assessment framework, the grounds for objection and the associated procedures for cross-border waste transports (hereinafter: shipments) carried out by the ILT from or to the Netherlands in the context of the European Waste Shipment Regulation (WSR).

In this chain plan, the above has been developed into a specific assessment framework for assessing whether the transfer of textiles is permitted. If this specific assessment framework deviates from the provisions of the 'cross-border transport' section, then the assessment framework of this chain plan is proposed.

On 20 May 2024, the amended Regulation (EU) 2024/1157entered into force. The amended EVOA (hereinafter nEVOA) will enter into force in stages. Until 20 May 2026, the provisions of Regulation (EU) 1013/2006 still apply to the transfer of waste. This is discussed further in the [section 'cross-border transport']. Where this chapter specifically refers to provisions in the amended EVOA, this is indicated by 'nEVOA'. In other cases, only the 'WSR' appears. If the old and new provisions are the same, but, for example, the articles are numbered differently, the article from the amended EVOA has been taken as a starting point and the article from the EVOA that has not yet been amended has been put in brackets.

Degree of recovery / any degree of dumping or other disposal

Where the term 'degree of recovery' is used in the text below, it refers to the waste after non-material waste has been separated. The same applies to the phrase 'any landfilling or other disposal'. Again, it is the waste after non-material waste has been separated.

Wastes containing certain SVHCs

If the waste to be shipped contains SVHCs, it may be necessary to deviate from the assessment framework below. For example, if there are POPs in place restricting the processing of the POPs Regulation. [SVHCs and other substances of concern] in this plan provides an overview of SVHCs that may be present in the waste. [SVHC Chapter] gives an overview of the legislation on the processing of waste with SVHCs and provides assessment frameworks where processing is efficient. This may also be relevant when assessing a notification for cross-border transport.

Scope of the assessment framework, grounds and conditions for objection

The following assessment framework applies to all textile sub-streams as indicated in [the minimum standard] of this chain plan. Where necessary, the assessment framework identifies certain sub-streams separately, as they are subject to different provisions or conditions. The assessment framework applies to the following transfers:

- the transfer of waste within the European Union, and
- import from outside the European Union and export to outside the European Union, unless the assessment against the EVOA already gives rise to an objection directly, see [Section 3.3.1 'Prohibitions'] of the section on 'cross-border transport'.

The assessment framework indicates when a transfer is not allowed and whether specific provisions apply. In all other cases, the shipment is allowed. The first table indicates the grounds for objection related to 'transfer for recovery' (Article 12 EVOA). The second table contains the grounds for objection related to 'transfer for disposal' (Article 11 EVOA). With regard to the transfer for deletion, from 21 May 2026, Article 11nEVOA shall apply. As from this date, the competent authorities of dispatch and destination shall not authorise a shipment for disposal, unless all the conditions set out in Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are fulfilled. See also the [cross-border transport chapter].

Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Preparing for re-use	If the extent of reuse does not justify the shipment. In this case, any landfilling or other disposal is too much (grounds for objection 12(1)(b) and (i) EVOA (Article 12(1)(g) EVOA)).
(Interim recovery followed by) recycling for component stream a	If sorting does not result in sub-streams that are suitable for reuse or recycling unless: • the notification shows that recycling is not technically possible is, or • the notification shows that the cost of recycling exceeds EUR 265 per tonne; and • some of the shipped waste will not be landfilled or otherwise disposed of. (grounds for objection 12(1)(b) and 12(1)(g) EVOA).
(Interim recovery followed by) recycling for component stream b	Due to the higher quality of processing in the form of preparation for reuse (grounds for objection 12(1)(b) and (i) of the EWSR (Article 12(1)(g) EWSR)).
(Interim recovery followed by) recycling for component streams c and d	If the degree of recovery does not justify the shipment. Any landfilling or other disposal is too high for this component stream (grounds for objection 12(1)(b) and 12(1)(g) EVOA).
Recovery for which the shipment is *not* authorised	Specific provisions and grounds for objection
Other recovery for component flow (a)	This is because post-sorting, more high-quality processing in the form of preparation for reuse or recycling is possible unless; • the notification shows that recycling is not technically possible is, or • the notification shows that the cost of recycling exceeds EUR 265 per tonne; and • some of the shipped waste is not yet landfilled. (ground for objection Article 12(1)(a), (b) and/or (n) EVOA (Article 12(1)(a) and, for transfers to the Netherlands, Article 12(1)(k) EVOA)).

Other recovery for component flows b and c	This is because higher-quality processing in the form of preparation for reuse or recycling is possible (objection ground Article 12(1)(a), (b) and/or (n) EVOA (Article 12(1)(a) and, for shipments to the Netherlands, Article 12(1)(k) EVOA)).
Other recovery for component stream d	If the degree of recovery does not justify the shipment. For component flow (d), any landfilling or other disposal is too much (grounds for objection 12(1)(b) and (i) EVOA (Article 12(1)(g) EVOA)).

Delete for which the movement is *not* allowed	Specific provisions and grounds for objection
All forms of (preliminary) disposal except landfilling	This is because higher-quality processing in the form of recovery is possible (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) EVOA)).
Landfill	This is because higher-quality processing in the form of recovery is possible; and • national self-sufficiency; and • transfer to the Netherlands in accordance with national legal provisions (because the conditions of Article 11(1)(a) to (h) and/or Article 11(2) nEVOA are not met (ground for objection Article 11(1)(a) and (b) EVOA)).

Explanatory Note

This part of the plan provides guidance on assessment frameworks. It also provides additional information that may be relevant when deciding on the processing or transport of textiles and footwear across national borders.

12. Explanatory notes on the scope

This plan covers textile and footwear waste collected separately through textile containers, charities, thrift shops, retail chains, collection points and door-to-door collection.

Similar waste but under different plans

The waste listed below is slightly similar to that included in this plan, but is covered by other plans (not exhaustive):

Waste	Waste plan, chain plan or waste hierarchy
Non-separately collected textiles, footwear	[Residual waste plan]
Sleeping bags, quilts and other eiderdowns and bedspreads	Processing according to the [waste hierarchy] as described in section ‘guidance tools’
Production constraints and cutting losses from the carpet industry	[Carpet waste plan]
Separately collected carpet waste	[Carpet waste plan]
Furniture (upholstered)	Processing according to the [waste hierarchy] as described in section ‘guidance tools’
Mattresses	[Waste plan for mattresses]

EURAL codes related to this plan (indicative)

The following EURAL codes may concern waste within the scope of this chain plan: 150109, 200110, 200111.

This list is indicative. Indeed, EURAL codes may be relevant for multiple chain or waste plans. Only [the delineation] of this chain plan determines what is covered by this plan, and not this enumeration of Eural Codes.

Customs codes related to this plan

The following customs codes can relate to waste that falls within the scope of this waste plan: 61 and 62 (clothing), 6302 (table, bed and household linen, 6303 (curtains), 64 (footwear), 4203 (leather and artificial leather clothing), 4303 (fur clothing) and 4304 (fake fur clothing).
Code 9404 (sleeping bags, quilts and other eiderdowns, bedspreads) is not included in this plan.

13. How to prepare high-quality notes

13.1Keeping waste separate and mixing

Mixing often requires a permit (see the [Mixing permit requirement decision tree]). The minimum standard and the waste categories set out in Annex II to the Environmental activities decree [Bal] form the basis for the rules on keeping waste separate. [Section 10.1.2 ‘Mixing permission’] sets out the assessment framework for allowing the mixing of textiles and footwear. In the case of ‘mixing’, this is described in [Section 4.1 ‘Definition of mixing’] of the ‘waste mixing’ chapter.

13.1.1 Keeping waste separate

The overview below summarises when companies or other target groups have an obligation to keep textile and footwear waste separate. Sometimes it is a direct legal obligation and sometimes a derivative of the fact that ‘mixing’ is an environmentally harmful activity. If a person who has an obligation to keep waste separate nevertheless wants to combine it, this is called mixing.

Situation	Legal obligation (direct or derived)
Keeping construction and demolition waste separate at the construction and demolition site	At the construction and demolition sites of construction works, there is no legal requirement to keep textiles separated and disposed of separately which are released during the actual performance of construction and demolition works on construction works *(Art.). 7.24, 7.25 and 7.26 Living Environment Buildings Decree)*.
Keeping industrial waste and hazardous waste separate *(general)*	Businesses must keep textiles and footwear separate and dispose of other waste separately, unless they have a mixing permit *(Art.). 3.195 and art. 3.196 Baland ‘waste mixing’ chapter*. If a company stores larger quantities of textile and footwear waste, then the company also has to keep textile and footwear waste separate from other waste of the same category and from non-waste, unless a mixing permit has been granted (*Art.). 3.195 and art. 3.196 Bal and ‘mixing of waste’* chapter). The quantities in storage are laid down in Article 3.185 Bal. [Waste mixing chapter] of the CMP and [Section 10.1 ‘Mixing permission’] of this chain plan provide the assessment framework for mixing permission.
Keeping company waste and hazardous waste separate *(prior to collection or delivery)*	This paragraph applies only to the separation of waste from disposers. This concerns only disposers who store, blend, bulge, separate, repackage and/or compact the waste exclusively. For these disposers, different rules apply as regards keeping them separate in general. Businesses must keep textile and footwear waste separate and dispose of it separately if required by the CMP *(Art.) 3.39 Bal)*. [Chapter 2.2.3 ‘Keeping corporate and hazardous waste separate’] states when this is the case. In other cases, mixing with other waste that also does not need to be kept separate is allowed. A company that still wants to mix textile and footwear waste with other waste needs a permit. [Waste mixing chapter] of the CMP and [Section 10.1 ‘Mixing permission’] of this chain plan provide the assessment framework for mixing permission. The Waste Guide for Businessesis a tool to check which waste a specific company is required to keep separate.
Keeping separate during collection	Collectors must always keep textile and footwear waste that is disposed of separately separate *(Article). 1b Waste Collection Decree)*.
Recycling centre	Textile and footwear waste is one of the 18 wastes for which the waste collection point must have a storage facility or make it known to the general public that individuals can access if the waste collection point itself does not handle this waste *(Article). 4.623 Bal).* [Chapter on separate collection of household waste] specifically addresses separation at collection points.

Municipal collection *(household waste)*	From 2025 onwards, municipalities have a duty to collect textile and footwear waste separately from households. For textile and footwear waste, in practice, this has been collected separately by municipalities for years. [Chapter on separate collection of household waste] sets out the obligations of municipalities.

13.1.2 Mixing notes

The reaching of waste often also involves mixing with other waste or with non-waste. The [Waste Mixing Chapter] and its assessment frameworks form the basis for assessments of 'mixing'. This should always be taken into account by the competent authority.

The chapter covers a number of specific mixing situations. Always check with all review frameworks in the chapter whether they apply to the mixing of textiles and footwear.

The essence of allowing the mixing of textiles and footwear is that once mixed, processing in accordance with the minimum standard should remain possible. This means that:

- The competent authority can only authorise the mixing of non-recyclable textiles and footwear with other waste (within waste category 112B) with the aim of recovering the waste in a different way than recycling it if, prior to mixing, the company has demonstrated that preparing it for reuse or recycling the waste, given its nature or composition:
  - technically not possible; or
  - that the duration of the recycling route would be such that the costs of delivery of these batches by the disposer to the gate of the processor would exceed 265 euros/tonne.
- Contrary to the [Mixing of waste], the competent authority cannot authorise mixing within waste category 28 of:
  - sorted textile and footwear suitable for reuse;
  - sorted textile and footwear suitable for recycling; and
  - unsorted, separately collected textile and footwear.

  This means that dirty or smeared textiles should not be mixed with clean, dry textiles because they risk contaminating clean textiles.

  Separately collected textiles should not be mixed with other wastes, as this hampers the high-quality processing of textiles.
- Mixing of mixed textiles and footwear or recyclable textiles and footwear (waste category 26) with non-recyclable textiles and footwear (waste category 112B) is not allowed as it impedes recycling.

13.2Explanation of the minimum standard

The table below summarises the processing options that can be authorised on the basis of the minimum standard. The paragraphs below the table provide more explanation and detail about the different processing options and also give more information about the minimum standard referred to in paragraph 10.

Waste hierarchy	Summary
Reuse	Reuse does not imply waste treatment. [Section 8 'Waste or non-waste'] describes the possibilities for direct reuse if they are known.
Preparing forre-use	Most of the textiles and footwear that were separately submitted can and must be reused. Therefore, the minimum standard is 'sorting' with the aim of obtaining reusable textiles and footwear.
Recycling	Textiles and footwear that are no longer suitable for reuse must be recycled. Deviations from this are only allowed under certain conditions.
Other usefulapplication	This is the minimum standard for textiles and footwear for which it is specified that reuse or recycling is really not possible for technical or economic reasons. In practice, incineration with energy recovery (R1) may be the only option that fits within this minimum standard.
Incineration as a formof disposal	Incineration as a form of disposal is not permitted for any of the wastes in this plan.
Landfill	The dumping ban applies to separately collected textiles and footwear.

13.2.1 Preparing for reuse

Preparation for reuse meets the minimum standard. The minimum standard for textile waste (and footwear) is sorting, with the aim of obtaining as many textiles and footwear as possible that are suitable for reuse. Most of the textiles and footwear that were separately submitted can and must be reused. This avoids the low-quality processing or incineration of collected textiles without sorting. This is in line with the objectives of the Circular Textiles Policy Programmeadopted by the Ministry of Infrastructure and Water Management for the period 2025-2030. This is also in line with the objectives of the Textiles RPV that producers are legally bound to. See also [Section 1.2 'Dutch Government Policy'].

Preparation for reuse includes: sorting, folding, washing, sizing up, preparing for sale, etc. by textile category. In practice, most separately collected textiles are already sorted into two categories: suitable for reuse and suitable for recycling. The minimum standard 'sorting' is in line with this.

13.2.2 Recycling

Separately collected textiles that have not been found suitable for (final) reuse during sorting should be recycled. Different forms of recycling are possible:

- Recycle by mechanically fibreboards and by spinning yarns again;
- Chemical recycling followed by the production of new yarns.
- Mechanical recycling in nonwoven furnaces such as fleece and felt;
- Direct recycling in, for example, cleaning cloths. In this process, the textile is not or is barely processed and recycled as such by the textile.

Recycling is not usually carried out in textile applications in which the textile was originally applied. They are applications that are less critical for, for example, composition, hygiene and/or odour. There is a cascading textile. Examples of applications using recycled textiles include:

- cleaning cloths;
- Blankets;
- Felt for sound insulation;
- Filling materials for, for example, dashboards, car seats, mattresses and furniture; • Paper production (cotton and linen).

The type of textile recycling that can be used depends primarily on the type of material (e.g. cotton or polyester) and also on the pollution that is present. Of the 47% of non-reportable textiles collected, 70.2% are recycled.

Recycling is preferable, in terms of policy, to high-quality recycling. Fibre-to-fibre recycling is an example. Therefore, specific targets for fibre-to-fibre recycling have been included under the RPV for textiles. In order to further encourage the scaling-up of fibre-to-fibre recycling, we set a mandatory percentage of recyclate in new textile products in the EU. However, this recycling is not yet done on a sufficient scale. Therefore, other forms of recycling remain necessary as long as this obligation does not apply. This means that all forms of recycling under the minimum standard are permitted for textiles that are not suitable for reuse for specific reasons.

If recycling is not possible or is too expensive due to the nature or properties of the sorted textile, this textile may be processed by other means (see next section).

13.2.3 Other recovery

Depending on how textiles have been applied and/or how textiles and footwear end up in the waste phase, preparing for re-use or recycling may not be possible. This may be the case, for example, in the case of:

- lots that are excessively contaminated or (textiles that include paint or oil spills);
- batches containing non-textile materials such as decorative parts with, for example, metal thread;
- textiles that have undergone chemical processing that add additional properties to the textile (such as flame retardation).

The same applies to textiles or footwear for which recycling has been proven to be too expensive (more than 265 euros/tonne at the gate of the processor).

In order to ensure enforceability, the minimum standard specifies that in such cases a different minimum standard applies, namely primary use as fuel.

Show that it is not suitable for recycling or that it is expensive to recycle

Section 2.4.1 'The minimum standard includes certain exceptions' of the [Guide to the use of minimum standard] describes how a company should demonstrate this. The costs that may be included in the calculation of the amount of 265 are described in [Section 5.3.2 'What is included in the limit of EUR 265?'] of the 'Use of the cost criterion' section. If, for the same reason, these wastes are transferred for another method of processing (to or from the Netherlands), the notification file must contain the information described in [paragraph 5.4 ‘Export and the limit value of EUR 265 per tonne’] of the ‘Use of the cost criterion’ section.

Processors that process these textiles include in the acceptance policy that they will accept textile waste and footwear only if it is demonstrated that the waste has been sorted out first but is not suitable for recycling or that recycling is more expensive than EUR 265.- per tonne. The acceptance policy should specify how this is to be demonstrated by companies and how it is administered by the processor. In doing so, the processor bases itself on the assessment framework of Section 2.4.1 ‘the minimum standard contains exceptions’ of the [Guide to use of minimum standard].

13.2.4 Incineration as a form of disposal

Incineration as a form of disposal is not permitted for separately collected textile and footwear waste.

13.2.5 Landfilling

Under the Landfills and Waste Dumping Prohibitions Decree, a dumping ban applies to separately collected textiles. Various categories of that Decision, such as 42, 15b or 16b, include textiles collected separately.

13.3Substances of very high concern (SVHC) and other substances of concern

SVHCs in the table below are known[100] to be present in textiles in concentrations above the concentration limits in [Table 1] in the chapter ‘SVHCs and other substances of concern’. If this is the case, the assessment framework of [Chapter on SVHCs and other substances of concern] must be taken into account when assessing the permitting of recovery of the waste.

Rules for specific SVHCs

European rules apply to many substances of concern. If a waste contains a substance that has been identified as a persistent organic pollutant (POP) under the Stockholm Convention, the treatment must first comply with the POP-Regulation. When recycled into materials placed on the market (as non-waste), the POP Regulation, the REACH-Regulationand product legislation can contain restrictions on the presence of a substance of concern. The second column of the table below indicates whether the SVHC in question is included in the POPs Regulation or on the REACH candidate, restriction or authorisation list. See also [Section 3.2 ‘Legislation to phase out and restrict use’] of the chapter ‘SVHCs and other substances of concern’.

Waste Processor Acceptance and Processing Policy

Waste processors must pay attention to SVHCs in acceptance and processing procedures (A&V), see the [Waste Authorisation Guideline]. When applying for a permit, waste undertakings and the competent authority make a case-by-case assessment of which SVHCs and other substances of concern are relevant in a specific situation. The overview below can be used as a starting point to provide an indication of which SVHCs are targeted, but it is not limitative. SVHCs and other substances of concern can already be relevant at low concentrations for the ways in which waste can or may be processed, for example because processing generates emissions into soil, water or air. See also the ‘approach to substances of very concern’ (IPLO) and the SVHC-navigator van RIVM.

Waste or non-waste

SVHCs and other substances of concern may also be relevant when assessing whether a material is waste or non-waste. See the [section ‘waste or non-waste’].

Overview of relevant SVHCs

100 Sources: SGS Intron, 2019, SVHCs in waste and RIVM, 2024, memo SVHCs in chain plans.

The table below provides a (non-exhaustive) list of SVHCs that may be present in textiles above the concentration limit value in [Table 1] of the chapter 'SVHCs and other substances of concern'. This is a snapshot of the available knowledge. New information may become available at some point, due to new or improved measurements, but also due to changes in the use of substances of concern in raw materials and products.

SVHC	Regulations	Waste and description
PFAS such as: • perfluorooctanoic acid (PFOA); • perfluorononanoic acid (PFNA); • perfluorooctane sulfonic acid and its derivatives (PFOS); and • perfluorohexane sulfonic acid (PFHxS) salts and related compounds.	POPs Regulation	The PFAS[1] mentioned in particular can be found in specific batches of natural and synthetic textiles to give these dirt and water repellent properties.
Nonylphenol, branched, ethoxylated (NPIOs)	• REACH Annex XIV (entry 43) • REACH Annex XVII (restriction 46b)	NPIOs are used as auxiliaries for various textile processes, such as wool degreasing and textile dyeing. NPEOs[2] can be found in (household) cotton and wool but are often already partially washed out during the use phase. Annex XVII to REACH introduces a restriction on NPE. NPIOs are part of this group. This restriction does not apply to the placing on the market of second-hand textile articles or new textile articles produced from recycled textile materials.
Bis(2-ethylhexyl) phthalate (DEHP)	• REACH Annex XIV (entry 4) • REACH Annex XVII (restriction 30, 51)	This so-called plasticiser[3] may appear in specific batches of textile products with prints or in polyester clothing.
Brominated flame retardants (with some exceptions after SVHCs)		These flame retardants can occur in batches of natural and synthetic textiles from a producer that has specifically used the flame retardant.
Flame retardants such as: • hexabromocyclododecane not specified; • Decabromodiphenylether.	POPs Regulation	These flame retardants can occur in batches of natural and synthetic textiles from a producer that has specifically used the flame retardant.
C10-13 chloralkanes (SCCPs)	POPs Regulation	This flame retardant may occur in batches of natural and synthetic textiles that have fire-resistant textiles or textiles with water-repellent properties from a manufacturer that has specifically used this substance.
Colouring agents such as: • C.I. Basic Blue 26, 4,4'methylenedidi-o-toluidine; • Cobalt dichloride; • Diethyl sulphate; • Dimethyl sulphate (DMST); • Benzidine;	• REACH Annex XVII (restriction 13, 28, 29, 30, 63) • REACH Annex XIV (entry 42)	These dyes[4] can be present in batches of natural and synthetic textiles above the concentration limit, coming from a producer that has specifically used this dye.
• ethoxylated 4-(1,1,3,3tetramethylbutyl)phenol ; • lead nitrate.		

Footnote 2, 3, 4, 5: See RIVM-Report 2022—0166.

14. Other information

14.1 Recovering critical materials

Critical materials are commodities such as metals and minerals which are of significant economic value and for which security of supply is reduced because the EU is highly dependent on non-EU countries. Some wastes contain these critical materials. The recovery of these materials can be carried out from certain wastes or is under way. We refer to 'potentially recoverable critical materials'.

Textiles and footwear are not expected to contain potentially recoverable critical materials. This waste is not mentioned as a promising waste in the report 'Recovery potential secondary critical raw materials based on waste plans in the LAP3' (TNO, 2023).

[Section 2.3.6 'Critical materials and high dignity'] of the CMP's 'Recycling of waste' chapter provides more information on critical materials in relation to waste treatment.

14.2 BREF in relation to minimum standard

The minimum standards of this chain plan have been assessed against the European BREFs to ensure that they are in line with the minimum standard. The outcome of this review can be found in the Report [PM].

For info, this test can only take place once the minimum standards are final and thus after the input.

14.3 Mention of the source

For this part of the CMP, the following documents have been used:

- RoyalHaskoning DHV (2022a). *Concretizing conditions that prevent recycling as aminimum standard.*
- RoyalHaskoning DHV (2022b). *Examine the concrete extent of recovery*.
- TNO (2023). [*Recovery potential secondary critical raw materials based on waste plans in the LAP3*].
- SGS Intron (2019). *SVHCs in waste — 2019 update*.
- RIVM (2024). [*SVHC in chain plans*].

Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

At present, no developments are foreseen that could lead to changes in the assessment frameworks of this chain plan.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter 'What is the CMP'].

Circular Materials Plan Design

Minimum standard for processing

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading 'Assessment frameworks'.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a 'content' or 'bookmarks' in the browser or the PDF reader's left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section 'Tools'.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can't read the text or images? Contact 088-7977102 or the helpdesk's contact form.

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Minimum standard for processing

This section outlines what the tool is a minimum standard and what is a recycling standard, why we use it and by whom and how it should be used. The latter is also accompanied by a separate [Guide to the use of minimum standard], which details this.

1. Target audience

The minimum standard is the assessment framework for approving waste processing initiatives. It is therefore particularly important for **permit authorities** to know how to use the minimum standard and what waste operations they may or may not authorise or under what conditions.

By extension, this chapter also applies to **waste processors** or **initiators of new waste management initiatives**. This chapter answers the following questions:

- How does a permit issuer assess my initiative?
- What is the reference used?
- Is my plan eligible for a licence?

2. Importance for the circular economy

2.1 What is the minimum standard?

The minimum standard describes the minimum quality of the processing of a given waste or category of waste. This will prevent waste from being treated at a lower quality than is desirable. The minimum standard determines which forms of processing a specific (category of) waste material(s) is or are not eligible for a permit or under which conditions.

The minimum standard is thus an implementation of the waste hierarchy for individual (categories of) waste and thus forms a reference level in the granting of waste treatment permits (for the waste hierarchy, see also [Chapter on guidance tools]). In principle, licences are only granted if the activity applied for is of at least an equivalent quality to the minimum standard. i.e. if the activity causes an environmental impact that is equal to or less than that of the minimum standard.

2.2 The minimum standard and a circular economy

In a circular economy, waste is managed in the highest quality way possible without risks to the environment and human health. In order to achieve high-quality waste management, lower-quality forms of processing should be excluded in specific cases. This can be achieved by means of several instruments and one of these is the minimum standard set out in the CMP.

3. Policy and legislation

3.1 Setting minimum standards

3.1.1 Who sets the minimum standards

In addition to regulating the quality of waste processing, the minimum standard has a uniform function. As a result of the minimum standard, all competent authorities assess similar initiatives equally (as far as possible). Minimum standards are therefore set nationally by the Minister for Infrastructure and Water Management and laid down in the CMP. The CMP therefore needs to be changed in order to set a new minimum standard. This will be done through a formal procedure (see the [chapter that is the CMP]). It is not the intention of other public authorities to adopt their own standard for their area which deviates from the minimum standard set by the CMP, neither more nor less of a quality.

3.1.2 Starting points when setting a minimum standard

The minimum standard is a tool to guide waste to a specific form of processing. In setting the minimum standard, the following two principles are applied:

1. Ensure that raw materials are retained for a subsequent application;

    This means focusing on the form of processing that best contributes to achieving a circular economy.

2. Ensure that waste treatment does not pose risks to the environment and human health;

    The aim is to monitor the quality of the raw materials of the future and to ensure that keeping materials in the chain does not result in risks to the environment and human health from contamination.

These two principles are derived from the waste policy objectives at European (Waste Framework Directive) and national (Environmental Management Act) level. Both principles ensure the safe, efficient and effective management of raw materials.

For the implementation of Principle 1, the most high-quality processing method as elaborated in [chapter guidance tools] is used. This includes the waste hierarchy and the use of the mLCA to determine which waste treatment is best suited to the transition to a circular economy at this time.

In most cases, starting point 1 is the guiding principle for setting a minimum standard, but sometimes guiding point 2 is a different choice than would have been made only on the basis of Principle 1. This is because the transition to a circular economy is not only about keeping materials in the chain as much and for as long as possible. In the past, raw materials have been used that we now no longer want to be in material chains on closer inspection. This is a 'linear inheritance', which we do not need to continue taking with us because it creates risks for the environment and human health. Principle 2 may then mean that the minimum standard can sometimes lead to a reduction, for example, in incineration or dumping rather than recycling, in order to avoid risks to the environment and human health. On this topic, see also the [Guide to the use of minimum standard].

3.1.3Other aspects when setting a minimum standard

The starting points from the previous section determine where we want to send a specific waste or direct it away. These principles are therefore crucial for the content of the minimum standard. However, there are more aspects to be considered, both in terms of the added value of setting a minimum standard and in terms of the requirements to be met in terms of content of a minimum standard. For example, the following aspects should be considered:

A. Costs of processing according to the minimum standard

If a processing method scores better in the environmental quality than alternative forms, but is extremely much more expensive, this may be a reason to dispense with the processing method in question. An alternative form of processing is only allowed if it is explicitly included in the CMP waste or chain plans. See also [section use of cost criterion].

B. Feasibility, practicability and processing capacity

Licences are brought in line with the minimum standard. This means that permits for processing methods that do not comply with the minimum standard will not be granted, and even will have to be actively amended or revoked if they have already been granted in the past. We therefore need to ensure that there is sufficient capacity to process the entire waste released in accordance with the minimum standard. It must also be a sufficiently robust structure of processing operations (proven and effectively available) that functions properly. For planned developments on this point, see [Section 5 'Future plans'].

Existing capacity abroad will not, in principle, be taken into account in the balancing exercise. Only when it comes to a waste that is produced in limited quantities and it is not worth realising a separate processing capacity domestically will the potential for processing in our neighbouring countries be considered when setting a minimum standard. A prerequisite here is that sufficient and accessible capacity is available abroad.

C. Consequences for cross-border waste transports

There is no point in steering the Netherlands towards a more high-quality form of processing if this could lead to waste being subsequently exported to our neighbouring countries for lower-quality processing. The question of whether this can occur and whether, in a specific case, we have legal options to stop such exports plays a role in the drafting or revision of the minimum standard. In most cases, a minimum standard will only be set as if it is also legally possible to prevent transport abroad.

D.Manageability and effectiveness in authorisation

The CMP is a bridge from policy to practice. The translation of minimum standards into effective and enforceable licences is one of the most striking examples. The minimum standard should not be a paper format but should be well translated into the practice of granting permits.

E. Added value of waste management

Setting a minimum standard should effectively contribute to achieving a higher level of processing. For example, the inclusion of a minimum standard in the CMP does not add much value where legal provisions already regulate the way in which the waste is processed. For further details, please see the box below.

Has added value through a minimum standard for waste management

A minimum standard adds *value* if one or more of the following provisions are met (not prioritised and not cumulative):

1. Sending to a specific form of processing is desirable/necessary;
   The minimum standard also has a unifying function as an instrument. The fact that several (potential) processors intend to carry out the processing of a waste may be grounds for achieving harmonisation of permit granting by means of a minimum standard.
2. There is no legislation that *exhaustively* regulates how a waste should/may be processed; the CMP is the only assessment framework;
   This could also be a strengthening/implementation of European rules at national level. 3. The waste in question is either released in the Netherlands or processed in the Netherlands;
   The minimum standards set out in the CMP are mainly based on waste generated in The Netherlands is emerging. It is possible to also include a minimum standard for other waste when it comes to the Netherlands for processing and it is useful to establish a reference for the purpose of granting a licence. At the moment, there are no examples of this.

A minimum standard is *not necessary in policy* in the following cases:

4. A waste is subject to a dumping ban, incineration is currently a common and acceptable route, and there are no reasons to refuse to allow higher-quality processing than incineration.
   Sending to incineration by means of a minimum standard does not add anything.
5. Waste may be landfilled, and no restrictions apply to higher quality processing. *The minimum 'dumping' standard does not add anything.*
6. Aspects other than waste processing determine responsible processing.
   For example, environmental safety or occupational health and safety legislation. Control over waste management is then of secondary importance.
7. Legal rules (national or international) determine how processing must be carried out; the minimum standard does not add anything to this.
   The inclusion of a minimum standard in the CMP has no added value where laws and regulations exhaustively regulate all aspects of the processing of that waste. Think of European regulations that are working directly and where there is no tightening at national level.
8. The waste in question is produced in the Netherlands, but not in a processable form.
   There is no added value in setting a minimum standard for the processing stage where the waste concerned is not kept separate earlier in the chain and therefore cannot be processed in accordance with the proposed minimum standard. Thus, in addition to the minimum standard, separation of waste at the disposer and proper collection must also be achieved.

3.2 Changing the minimum standards

The minimum standard is intended to be a lower limit and defines the minimum processing to be eligible for a licence. Since permits for lower-grade forms of processing than the minimum standard should not, in principle, be granted, it is relevant that processing in accordance with the minimum standard is indeed possible, both technically and in terms of capacity. In practice, therefore, the raising of minimum standards to a more high-quality form of processing is subject to the same two principles ([Section 3.1.2 'Principles for setting a minimum standard']) and five additional aspects ([Section 3.1.3 'Other aspects for setting a minimum standard']) as for setting an entirely new minimum standard. In practice, this means that a minimum standard will not be raised – from incineration to recycling, for example – until it is certain that the waste in question can be recycled.

To adapt a minimum standard, a planning amendment procedure is followed, including participation (for more information, see the [section on what is the CMP]). Where the waste and chain plans include a future outlook on the minimum standard, the minimum standard included in the forward looking will not really constitute the permit framework until the CMP has actually been updated. In the interest of uniform policy implementation, it is not intended that competent authorities should take forward-looking perspectives on their own initiative. This does not apply if the applicant requests a licence. Accordingly, competent authorities are not themselves empowered to set higher standards than the minimum standard set out in the CMP, but an initiator of an innovative and high-quality processing technique is free to apply for authorisation.

Where a minimum standard is amended, the competent authority must also update the permits within one year of their entry into force (Article 8:98DecreeQualityLiving Environment). However, this does not always mean that the site/installation/working method needs to be adapted immediately. Changes to the minimum standard may be subject to a transitional period, depending on the nature of the change. This period may take into account, inter alia, investments made in existing processing methods. It is also important to note whether the amendment in question had already been announced in the future in the waste or chain plans or not. After all, announced changes allow companies to take longer into account when making investments in new facilities or processing methods.

3.3 Designating minimum standard as recycling standard

3.3.1 What is a recycling standard

In many cases, the minimum standard in the CMP has been formulated as a step in the waste hierarchy. All forms of recycling are eligible for a permit if the minimum standard is formulated as ‘recycling’ without further specification.

As not all forms of recycling contribute equally to the transition towards a circular economy, the recycling standard can be used. Where a form of processing has been identified as a recycling standard, it has been decided to distinguish between specific forms of recycling within the recycling step of the waste hierarchy. The form designated as a recycling standard is preferred over other forms of recycling and is the only form of recycling that is eligible for a permit.

3.3.2 Establishing a recycling standard

In order for a form of recycling to be designated as a ‘recycling standard’, it must be established, in addition to the basic principles of changing minimum standards, that:

a. that specific form of recycling contributes best to the transition towards a circular economy;
b. that specific form of processing is also an acceptable route from an economic point of view (i.e. the processing costs for that route are considered acceptable), and
c. guidance on this type of processing is possible and desirable (e.g. infrastructure in place, investments made, relation to processing abroad, etc.).

Condition (a) is to a large extent an expression of the principles set out in [Section 3.1.2 ‘Basic points for the establishment of a minimum standard’]. Because setting a recycling standard involves a distinction within the same step in the waste hierarchy, the preservation of raw materials is particularly important in a subsequent application. This includes the extent to which the waste stays in the chain over several cycles and its quality (see also [section 3.3 ‘Assessing high-quality recycling’] in section ‘Assessing forms of recycling’). The use of the mLCA can play a role in determining the most suitable form of recycling in the transition to a circular economy. In some cases, preference may be given to preventing risks to the environment and human health rather than keeping raw materials as much and as often as possible in the material chain. This may also be a reason for considering a specific form of recycling as a recycling standard.

Condition (b) and (c) are in fact those aspects that are involved in the determination of each minimum standard and which are discussed in [Section 3.1.3 ‘Other aspects in setting a minimum standard’]. However, these aspects are specifically considered in light of the added value of steering within the ‘recycling’ step of the waste hierarchy.

Where a specific form of processing has been identified as a recycling standard, this is the only form of recycling that is eligible for a permit. Other forms of recycling are not authorised and it is also not possible to compare another form of recycling with an LCA with the recycling standard in order to still be eligible for authorisation. The use of a recycling standard therefore comes down to the ‘recycling of the waste hierarchy’ step. It remains possible to obtain a ‘preparation for reuse’ licence. This is because it is beyond recycling in the waste hierarchy.

In order to be considered a recycling standard, a processing form in the minimum standard must be explicitly designated as such. It is only from the moment that a form of recycling has been marked as a ‘recycling standard’ in a waste or chain plan of the CMP that the intention is no longer to allow other forms of recycling. Thus, it is not intended that competent authorities individually decide to discontinue permitting certain forms of recycling because, based for example on an LCA study carried out, they consider that another form of recycling would merit the designation ‘recycling standard’. One reason for this is that in setting the minimum standard more aspects play a role than merely high quality based on an LCA calculation. It would also undermine the uniformity of the CMP in the area of authorisation. Also, for cross-border waste transports, the recycling standard only plays a role if the assessment framework in the relevant waste or chain plan in the CMP is explicitly aligned.

Further guidance on the use of the recycling standard in permit granting can be found in the [Guidance on the use of minimum standard].

3.4The minimum standard and BREFs and BATs

An environmental permit can only be granted if the best available techniques applicable to that activity are complied with (Article 8.9(1)(d) of the Decree Quality of Living Environment (Bkl)). In determining this, the BAT conclusions (Article 8.10(1) Bkl) and the information documents (referred to in Annex XVIII(A) to that Decision) should be taken into account.

Many BAT conclusions focus directly on the reduction of emissions to the environment and/or ways to reduce them. These are important for the purposes of licensing, but are not always directly related to the minimum standards contained in the CMP. However, in other cases, they are BAT conclusions on the use of a processing technique or a quality control of waste. However, these may be relevant for the minimum standards in the CMP. In setting the minimum standards in the CMP, the applicable BAT conclusions have been taken into account. The minimum standards certainly do not cover all relevant BATs, but are in any case not in conflict with the applicable BATs.

More information on BAT conclusions can be found at the sites of Infomiland Iplo.

4. CMP assessment frameworks

This chapter does not contain any own assessment frameworks. These can be found in:

- The [Guide to the use of minimum standard]
- The [Guide to mLCA]

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

One of the conditions for setting or raising the minimum standard is that the new processing technique must have sufficient capacity in the Netherlands to be able to process all the waste that is released (see [Section 3.1 ‘Setting minimum standards’]).

At the outset, businesses that are developing new high-value processing techniques may lack the capacity to process the vast majority of the waste. In that case, a high-quality form of processing is possible, but it cannot yet be introduced as the minimum standard. This would mean that this material can no longer be processed according to the old minimum standard while the capacity is insufficient to process the entire material stream according to the new minimum standard.
Not setting the minimum standard will ensure that waste management remains practicable and workable, while at the same time ensuring that the minimum standard has little incentive to do better than the minimum. This may lead to potential operators of new processing techniques not daring the investment, as they cannot compete with pre-existing but lower-quality and often cheaper processing techniques or methods.

For the CMP, we are exploring how to further support companies that develop new high-quality processing techniques. This is the reason for the following two intentions:

1. The aim is to update the minimum standards regularly in the intervening period where there is sufficient reason to do so. In order to give potential operators of innovative techniques a number of minimum standards explicitly include a forward-looking perspective in which possible adaptations are announced. The aim is to convince such operators that investment in new innovative techniques is ultimately supported by policy.
2. We are currently exploring how to provide businesses with a guaranteed offering of the waste through available high-quality processing techniques, even if the waste is more expensive for the disposer than other forms of processing. However, the possibility of lower-quality processing of all the remaining waste remains, in order to ensure that the waste can be processed as a minimum. We are exploring whether the full load declaration system, as it is already used for the dumping ban, can be used for this purpose. The material would then first be offered to a high-quality processing technique operator. The low-value processing technique can only be used by market participants if the high-quality processor no longer has the capacity to take on additional batches of waste. If crystallised, the system may be implemented in the event of a change to the CMP for a number of wastes.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

6. Resources and more information

- The [Guide to the use of minimum standard]
- The [Guide to mLCA]
- Visit the Iplowebsite for IPCC and BAT conclusions.

Circular Materials Plan Design

Preparing and implementing landfill bans

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

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Home > Topics > Landfilling or recovery > Preparing and implementing landfill bans

Preparing and implementing landfill bans

In order to minimise landfilling, legal dumping bans are an important tool alongside minimum standards set out in the CMP. The CMP plays a role in any potential deviation from these prohibitions and in the granting of derogations. This section looks at this role of the CMP.

1. Target audience

The granting of exemptions from the dumping ban is a task carried out by the environmental services (ODs) on behalf of the provinces. In the first instance, therefore, it is primarily the **OD staff dealing with the requests for exemption from the dumping ban** who need to be aware of the content of this chapter.

A request for exemption from the dumping ban is made by the **landfill operator** where the disposer intends to dump the waste in question. This topic is therefore also relevant for them. **The person who wants to dispose of the waste in the landfill** must provide the operator with the necessary information about the waste so that the landfill operator can apply for the exemption.

2. Importance for the circular economy

Since landfill is regarded as the least desirable form of waste disposal, it is not permitted in the Netherlands to dump recoverable or combustible waste. In many cases, we know of legal dumping bans for these waste substances included in the Landfills and Dumping-prohibited Waste Decree(Bssa).

As indicated, inter alia, in [section 3.3 'Landfill as a public utility function'] in section 'Authorisations and waivers for landfilling', for waste that cannot be recovered or incinerated, cases may be referred back to landfilling as a last resort. As, in certain cases, even for waste subject to a dumping ban, more high-quality processing cannot or cannot temporarily be carried out, there is the possibility of dumping with an exemption. The Provincial Executive has the power to grant such a waiver.

Waste must always be handled in a secure manner, even if it means that it must be landfilled. Second, the fall-back to landfill with a derogation must be limited to those cases and to the extent strictly necessary. The latter requires an informed assessment as to whether a waiver should indeed be granted in a specific case. For the granting of these exemptions, this chapter is accompanied by the [Guidance on landfill ban exemption] assessment framework.

3. Policy and legislation

3.1 Landfills and Waste Dumping Prohibitions Decree

Article 1 of the BSSA lists 45 categories of waste for which landfilling is prohibited. However, for 31 of these waste categories, it is possible to apply for an exemption from the prohibition. Article 4 provides that the Provincial Executive may, in the permit of a landfill, attach a requirement that the dumping ban does not apply to designated categories of waste (except for categories 1 to 14) if such waste is designated pursuant to article 5 or 6 of the BSSA.

- Article 5 BSSA:

‘By regulation of Our Minister, categories of waste mentioned in Article 1(1), categories 15 et seq. or parts of those categories may be designated, for which in his opinion no other manner of waste management than dumping is possible in the Netherlands.’

- Article 6(1) BSSA:

  ‘At the request of the operator of a landfill site, the Provincial Executive may state that, in their view, there is no alternative way of waste management in the Netherlands than dumping for waste listed in Article 1(1), category 15 et seq., or for part of such a category.’

There are therefore two possible ways of derogating from the dumping ban: on the basis of a Ministerieleregulationand on the basis of an exemption from the Provincial Executive competent for the landfill in question. This section deals with the second way.

3.2 2013 Landfill Ban Certificate Regulation

Article 7 of the BSSA provides that rules shall be laid down by Regulation of the Minister regarding the information to be provided to the Provincial Executive in the event of a request for a statement as referred to in Article 6. This arrangement is the 2013 Dumping Ban Declaration Regulation. This arrangement establishes what an application for a landfill exemption must comply with.

3.3 Guidance on landfill ban exemptions

It is desirable that environmental services (ODs) have the appropriate information to weigh properly whether, to what extent and for what time, the granting of an exemption is necessary. It is also desirable that the different ODs assess the same cases in the same way. In order to promote this, the [Guidance on landfill ban exemption] has been drawn up under the CMP.

This Guide covers, among other things, the following points:

- how it is assessed that there is no alternative way of waste management to landfilling,
- the number of wastes exempted in one decision,
- assessing a request for exemption against the requirements of the Ministerial Order;
- requirements for declarations by processors,
- etc.

This guidance document is part of the CMP, and in this way falls under Article 10.14 of the Environmental Management Act, which states that the competent authority must take the CMP into account when making decisions on waste.

3.4The CMP as the assessment framework for the granting of waivers

The starting point is that landfilling is only carried out for waste for which no other form of waste management is possible. For waste substances subject to a legal dumping ban, the minimum standard in the CMP on dumping is, in principle, not allowed either. A number of minimum standards still allow landfill to be restored on financial grounds, or take into account the existence of batches of waste with a different composition preventing normal treatment. However, the minimum standards in the CMP deliberately disregard any incidents or calamities which lead to sudden waste of very different composition, to an oversupply, or to the elimination of part of the processing capacity. In these cases, the granting of an exemption is not in line with
deviate from the CMP in the same way as the minimum standard. To this end, the [derogation procedure] from the ‘deviation’ section should be followed.

In the case of this derogation procedure for the issuance of a discharge from the dumping ban:

- the ‘communication of intention’ can be done by sending the request for exemption (including annexes) to Rijkswaterstaat WVL. In doing so, the Authority will briefly state the reasons why it intends to grant the exemption and the amount of waste and the period for which it is intended to grant the exemption.
- the “obligation to send the decision” is fulfilled by the implementation of Article 6(4) of the BSSA to the Directorate-General of Public Works and Water Management, WVL. Therefore, no separate additional transmission is required for the purposes of the derogation procedure.

3.4.2The minimum standard and landfill exemptions

There can be ‘no other way of waste management than landfilling’ when:

1. too little processing capacity is available due to plant failure or excess waste.
2. because of an unusual incident or calamity, the composition of the waste has changed in such a way that it can no longer be processed in the intended manner.
3. disproportionate costs of processing.

In all cases, the minimum standard for the waste in question is relevant for determining what alternative forms of waste management should be considered. Is recycling the normal form of processing accepted and can recycling not be achieved or is it not costly on the basis of one of these criteria? We do not immediately return to landfill, but consider incineration as an option first. It is only when this is not possible that a landfill exemption is considered.

There are minimum standards which explicitly state that the deposit of a residue should be avoided (residual household waste, residual business waste, mixed construction and demolition waste). In these cases, the granting of an exemption for the landfill of waste is not an issue. After all, a permit to dispose of a residue that is to be landfilled should not be granted if the minimum standard so prohibits. Should this be the case in error, the competent authority must make efforts to have the permit holder adjust his waste management practices. The repeated acceptance of the disposal of such a residue is highly undesirable.

Disproportionate costs

Both the explanatory notes to Art. 6 of the Bssa (Official Gazette 2012, 466) and the explanatory notes to the Dumping Ban Declaration Regulation 2013, Art. 1(h) and (i) (Official Gazette 2012, 21102) state:

> ‘An indication of what is to be regarded as disproportionate will be described in the National Waste Management Plan (LAP). These are the costs of alternative processing compared to landfill costs.’

As the CMP is the legal successor to the LAP, the CMP implements the EUR 265 — which implements this cost criterion from this regulation.

The starting point is that a waiver can only be granted on the basis of disproportionate costs where explicitly allowed by the minimum standard. In practice, (see explanatory note in the context), exemptions from the landfill ban on grounds of disproportionate costs can only be granted for:

- plaster and stone wool.
- the occasional cases where waste [1] is subject to a dumping ban, but the CMP does not have a minimum standard [2] and recycling and incineration are not economically an option [3].

Landfill exemptions when alternative processing is too costly

(1) The applicable minimum standard contains the cost criterion
In order to benefit from this cost criterion, all technically possible options (including incineration) must demonstrably be more expensive than this EUR 265 (excluding VAT, only processing costs). However, all the minimum standards that include the financial criterion only state that if recycling is more expensive than the EUR 265 standard, you can switch back from recycling to incineration. There is no possibility of returning to landfill on the basis of the financial criterion. Some exceptions are plaster and stone wool. Only in these cases will an assessment against the minimum standard therefore lead to the possibility of a return to landfill on the basis of the financial criterion.

(2) *The applicable minimum standard does not contain a cost criterion*
In this case, the granting of an exemption on the basis of the financial criterion is not relevant. In some cases, however, the minimum standard does provide for the possibility of taking into account a different composition. Therefore, in general, we are first confronted with incineration as an alternative, and dumping would only take place if it is not technically possible. In all other cases (neither the financial criterion nor the technical criterion in the minimum standard), the minimum standard does not provide for any lower-quality processing. Processing of lower quality than the minimum standard is therefore neither necessary nor desirable. With the exception of a calamity, the granting of an exemption is not an issue.

(3) *No minimum standard is applicable*
In this case, the policy framework, including the waste hierarchy, is the assessment framework. Again, landfilling is only dealt with when neither recycling nor incineration are an option. Based on the following passage (see end of box) from [section 3.1’What is the limit of EUR 265 per tonne used for’] from section ‘Use of the cost criterion’, it can be concluded that the financial criterion can be used in these cases. However, it should be noted that situations where a dumping ban applies cumulatively [1] to a waste substance, [2] the CMP does not have a minimum standard and [3] both recycling and incineration are not technically and/or economically an option will be exceptional.

[start of citation]
For waste not covered by a sectoral plan, the competent authority itself assesses the waste hierarchy against the waste hierarchy (see [Section 3.4 ‘Distinction between higher or lower-quality processing’] in section ‘guidance tools’). Here, the competent authority may use a price of EUR 265 per tonne as an indication of whether a higher quality form of processing is reasonable from an economic perspective.
[end of quotation]

4. CMP assessment frameworks

4.1 New dumping bans

If a processing technique other than landfill is developed for non-combustible and non-recoverable waste, it is desirable to add the relevant waste to the BSSA dumping bans. The inclusion of a dumping ban in the BSSA requires a minimum of one and a half years depending on the processing technique and available information. The amendment of the BSSA may be initiated as soon as the new processing method can be clearly authorised, the initiative is likely to be realised and is expected to meet the set criteria.

Before such a new dumping ban takes effect, the following conditions must be fulfilled:

1. The environmental impact of the new processing technique is lower than the environmental impact of landfilling (according to the methodology in the [high-quality processing chapters] and the [Guide to mLCA]), or the new processing technique is preferable to landfilling from a risk management/public health perspective.
2. There is a market for the materials remaining after processing.
3. The new processing technique does not cost the waste eliminating party more than EUR 265 per tonne (see [section on use of the cost criterion]).
4. The new processing technique functions properly, is able to process at least 75% of the annual generated volume of this waste and a concrete plan by the initiator(s) is in place to be able to process 100% of the annual generated volume using the new technique within a maximum of two years.

In principle, only processing techniques available in the Netherlands will be taken into account when a dumping ban is introduced. Capacity abroad will only be taken into account if it is a waste that generates only a limited amount of waste and it is not worth realising a separate processing capacity domestically. An enabling condition is that sufficient and accessible capacity is available abroad. The landfill ban criteria are formulated in a very strict manner as they are the proverbial lock on the door, there is no other processing method down the ladder. If the criteria and/or the system for raising the minimum standard are changed (see [Chapter on minimum standard for processing]) this principle will also remain valid.

4.2 Granting of exemptions from the landfill ban

- In addition to the points below, when assessing requests for exemption from the dumping ban, the competent authority will take into account the [Guidance on dumping ban exemption].
- When assessing the possibilities for processing other than dumping, the competent authority explicitly takes into account the full load list maintained by the Directorate-General of Public Works/Living Environment. For the use of this full list, see also the [Landfill Ban Exemption Guideline].
- When granting exemptions, the time limit is kept as short as possible. This means, for example, that for waste whose market situation may have changed in a number of weeks, exemptions are not granted for, for example, a six-month or one-year period.
- Landfill bans based on excessive cost levels of alternative forms of waste management will not be granted if the CMP sets a minimum standard for the waste concerned. Some potential exceptions are plaster and stone wool.
- The competent authority will send a request for a landfill ban exemption (including annexes) to the Directorate-General of Public Works and Water Management as soon as possible when [1] it intends to grant the exemption and [2] the granting of the exemption is contrary to the applicable minimum standard for that waste. In doing so, the competent authority should briefly state the reasons for which it intends to grant the exemption and the amount of waste and the period for which it intends to grant the exemption.
- In principle, exemptions from the dumping ban for residues arising from the processing of waste will not be granted where the minimum standard explicitly states that landfilling must

be prevented. The competent authorities shall then endeavour to obtain the permit holder's adaptation of his waste management mode in such a way that no more residue is landfilled.

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

No developments are currently foreseen that could lead to changes in the review frameworks of this chapter.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

6. Resources and more information

[Guide on dumping ban exemption]

Circular Materials Plan Design

Repair and reuse

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Home > Topics > Repair and reuse

Repair and reuse

This section presents practical questions and answers on legislation and regulations related to repair and reuse. Other issues related to repair and reuse, such as financial deficit, logistics, missing knowledge or insufficient market demand, are not covered.

This chapter opens in turn to (paragraph number in brackets):

- The main target groups that should read this section (1)
- The importance of repair and reuse for the transition to a circular economy (2)
- Repair and reuse policy and legislation (3)
- CMP assessment frameworks (4)
- Future plans (5)
- Resources and more information (6)

1. Target audience

This section has been written for repair and reuse providers, producers, municipalities, and permit and supervisory authorities. These target groups are highlighted below.

This chapter focuses on both repair and reuse for individuals ('business to consumer') and repair and reuse providers for the business market ('business to business'). This section has not been written for private or DIY repairers.

Repair and reuse providers

This chapter has been written for companies and organisations involved in product repair and/or reuse, such as business services providers, thrift shops, repair cafés, startups and retailers. Depending on the situation, repair and re-use may involve legislation and regulations for these parties. This section outlines the laws and regulations for each target group.

Manufacturers

This section has also been written for producers. To achieve a circular economy, they need to make their products fit for repair and reuse. For this purpose, product design, such as the choice of materials and how the product is composed, is crucial. Producers can also give instructions to consumers on how to repair products. In this section, producers read the laws and regulations related to the promotion of repair and reuse.

Municipalities

Municipalities play an important role in the area of repair and reuse. Municipalities own or order the collection point. Municipal authorities are also permit-granting authorities and supervisors for companies and organisations engaged in repair and reuse. Finally, more and more municipalities have a circular crafts centre, bringing together recycling centres, repair bars and thrift shops. In this chapter, municipal officials for the collection point, repair café and thrift store read about the laws and regulations that apply in relation to repair and reuse. As the permit issuer and supervisor, they read about the rules on repair and re-use that companies and organisations have to comply with and the possibilities available.

Authorisation and supervisory authorities

In this section, permit authorities and supervisors read the rules on repair and reuse that companies and organisations need to comply with and the possibilities available. This section does not contain a binding assessment framework for the competent authority. There are also no assessment frameworks for the establishment of decentralised regulations.

2. Importance for the circular economy

Preserving value is central to a circular economy. As long as a product is usable, no new product needs to be created nor new raw materials need to be used. Repair and reuse help to extend the life of materials and products. Repair and re-use are thus important for a circular economy. However, repair and the preparation for reuse of (end-of-life) products are regulated. For example, it depends on whether it is a waste or a non-waste. The assessment of activities may have to be done through a licence application. Compliance with the rules is also monitored. The rules are described in [Section 3, Policy and Legislation] on the basis of frequently asked questions and answers.

2.1 Where can the consumer go to have a broken product repaired?

With the broken product they want to have repaired, consumers can see many things. There has traditionally been a repair sector, including tailors, shoemakers, bicycle and plumbers, for example. Several manufacturers now own a repair department or source their repairs from several third parties or certified service centres. Several retailers also employ repairers and offer the possibility of repair.

In addition to the established repair industry, the consumer also has access to repair cafés. These are increasingly combined with thrift shops, recycling centres and/or educational institutions. This will create a circular Craft Centre. In this way, municipalities implement a circular economy at local level in practice, with the added value for people and the environment immediately visible. There is no unified circular craftsman's centre. The separate components of a circular craftsperson centre, such as the recycling centre, circular shop and repair café, are therefore treated separately. For more information on circular crafts centres, see www.circulairambachtscentrum.nl.

2.2 Waste or non-waste when reused and repaired

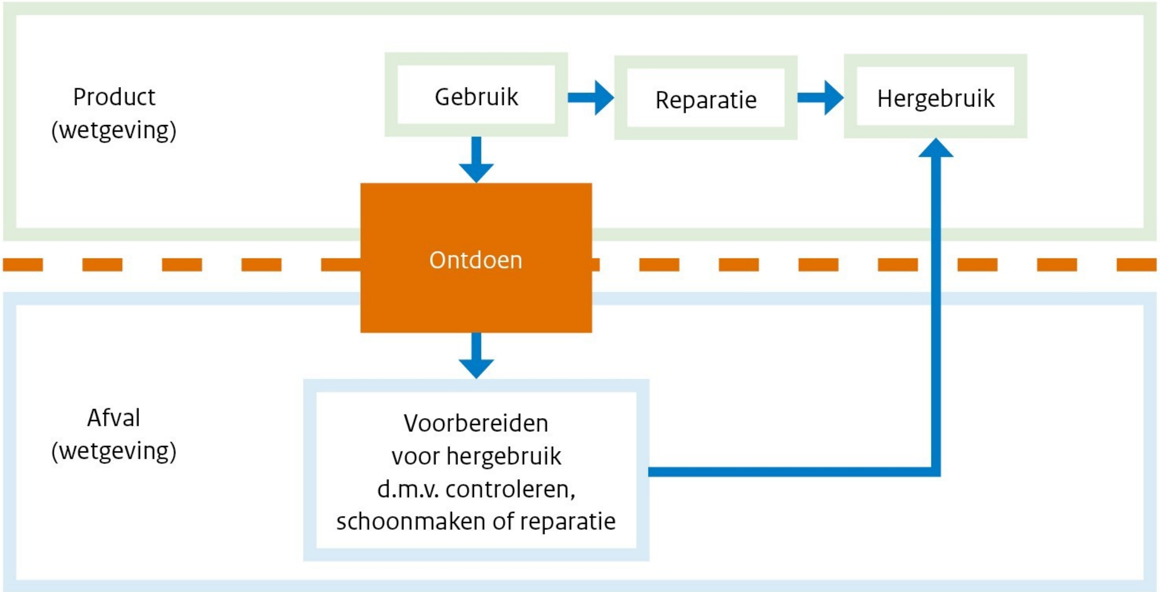
This chapter deals with repair and reuse. In legal terms, this could be waste or non-waste. This legal distinction may cause some confusion. The content is explained here. A holder may have a product repaired or have it repaired with the intention of using it, or others. All use, repair and re-use are then classified as non-waste.

If the holder disposes of, or intends to dispose of, a product, it is a waste. The waste legislation is then in force. A waste can be prepared for reuse. This may include repair. Following this preparation for re-use, the suitability of the material for further use can be assessed. The following conditions for end-of-waste status are relevant:

1. the materials are intended to be used for specific purposes;
2. a market or demand exists for the materials;
3. The materials comply with the technical requirements for the specific purposes as well as with the legislation and standards applicable to products.
4. the use of the materials does not have an overall adverse impact on the environment or human health.

[Section 3] discusses in more detail the importance of the distinction between waste and non-waste per situation. Where relevant, it is referred to the [waste or non-waste chapter]. See also the figure below.

Figure 1: Repair and reuse as waste or non-waste



3. Policy and legislation

This section explains legal frameworks and policies on repair and reuse. For the following actors, practical questions on repair and reuse are answered and relevant laws and regulations explained:

- Manufacturers
- Business Market Providers
- Recycling centres
- Thrift shops
- Repair cafés
- Startups
- Shopkeepers

The [legislative overview chapter] provides an overview of all relevant product, substance and waste legislation. Where relevant, we refer to this section.

3.1 Manufacturers

Producers decide which products to place on the market. They decide which raw materials their products are made of, how they are structured, how robust the products are and how long they remain functional when they are used with care. This will influence producers' choices on how long a product can be used or reused.

The choices producers make in terms of product selection determine how easy it is for products to be repaired or have them repaired. Manufacturers can make sure that individual parts of products are available for repair. They may also choose not to glue components, but to use reversible attachments such as screws or click joints. In addition, producers can provide good information on the composition and construction of the product, details of components and their availability. Producers are obliged by European legislation to issue guarantees on their products. As a buyer of a product, you also have several rights. The CMP is not related to consumer law and therefore refers in this section to the Consumers' Association and the Consumer Information Office of the Authority for Consumers and Markets (ACM). More information is available on theConsumers' Association websiteand on theConsumer Information website.

3.1.1 Eco-design for sustainable products regulation

The European Eco-Design for Sustainable Products Regulation[101] (ESPR), which entered into force in July 2024, provides requirements for product design. The Regulation aims to improve the environmental

101See: Regulation - EU - 2024/1781 - NL - EUR-Lex (europa.eu) sustainability and circularity of products by setting design requirements that products must meet before they can be placed on the market. Appropriate design requirements will be decided by the European Commission on a product-by-product basis. These requirements can contribute, for example, to making products use (energy) economically, extending their lifespan, improving their repair, improving their recyclability or containing recycled materials. This promotes circular business models. This EU Regulation also introduces the Digital Product Passport. This passport provides an insight into the circularity aspects of a product. For products subject to Ecodesign requirements, the addition of a Digital Product Passport will be mandatory.

The ESPR is the revision of the current Ecodesign Directive (2009/125/EC) that is already in force. Through this Ecodesign Directive, the European Commission already had the opportunity to prepare product regulations with design requirements for energy-related products, such as vacuum cleaners and washing machines. Existing product regulations often include requirements on a product's energy consumption and water consumption. There is a list of all product groups for which regulations are in force. More information can be found on the RPV Waste websiteCircularor [legislation overview chapter].

3.1.2 Repair promotion

Existing consumer legislation (see [chapter overview of legislation]) allows the consumer to have the defective product repaired free of charge by the seller.[102] After the guarantee period, the consumer generally has to pay for repair or to replace the product at their own expense. For more information, please see theConsumers' Association websiteand the Consumer Information website.

The European Commission (EC) presented a new Directive Bill on 22 March 2023 to stimulate the choice of repair.[3] The text of the Directive has already been adopted and published in summer 2024. The Member States will then have two more years to implement the Directive into national law. The Directive covers the products that are subject to Ecodesign requirements. Producers are required, among other things, to repair defective products instead of replacing them if the consumer so requests. The producer may charge a fee for this. Furthermore, the Directive also obliges Member States to, inter alia, set up a national platform to make it easier for consumers to contact appropriate repairers. In the Netherlands, such a repair register is already under development, check the website National Repair Register. The Directive aims to make it easier for consumers to repair or have a defective product repaired rather than replace it with a new one.

3.1.3 From product sales to services

The above-mentioned EU legislation contributes to an increasing number of companies expanding their services with new or additional revenue models. In addition to selling new products, manufacturers can offer maintenance and repair services. This service can lead to longer useful lives and a reduction in new use of raw materials.

3.2 Business Market Providers

Business market providers provide services to business clients, not to individuals. Due to the large volume of this market and the often uniform products (e.g. office chairs and desks), this sector's impact is high if it chooses repaired and/or second-hand products. Many of these organisations, such as office furniture suppliers, project planners, ICT service providers and second-hand traders, carry out repairs or reuse products. Maintenance and repair are often taken into account as conditions in contracts with their clients. Repair and reuse activities (such as inventory management, quality assessment, maintenance and return logistics) are thus becoming a central part of business management. Below are a number of questions that may be raised by providers for the business market. The company can establish contact with the competent authority for specific situations.

3.2.1 Are there any rules that prevent old batches, such as unsold supplies, from being bought back for reuse?

No. If the holder wishes to sell old batches, such as unsold stocks, for reuse purposes, purchases for reuse are possible.

102 Under Art. 7:21 (1) (b) of the Civil Code, the seller has to remedy a non-compliant product. 3 See also cabinet's BNC factsheet on Common Rules for Stimulating Repair, https://www.rijksoverheid.nl/documenten/richtlijnen/2023/03/22/fiche-2-Directive-common-rules-forencouraging-repair.

In order to determine whether the old batches are waste or not, the intention of the holder is important. If the holder offers (sells or donates) the products, this constitutes non-waste. This allows dealing with the old parties. If the holder wishes to dispose of the old batches, the waste is present. In this case, the old batches may only be handed over to persons authorised to receive waste (Article 10.37 of the Environmental Management Act). The waste can be prepared for reuse. This means that simple operations, such as checking, repairing or cleaning, are carried out. After these operations, the waste may be assigned to the end-of-waste status, after which the product can be marketed again.

In order to achieve the end-of-waste status, there must be a recovery operation and the material must comply with the four conditions set out in Article 1.1(6) of the Environmental Management Act for end-of-waste status:

1. the materials are intended to be used for specific purposes;
2. a market or demand exists for the materials;
3. The materials comply with the technical requirements for the specific purposes as well as with the legislation and standards applicable to products.
4. the use of the materials does not have an overall adverse impact on the environment or human health.

The holder of the waste will first assess whether the four conditions for end-of-waste status have been met. Such an assessment can be simple or slightly more complex depending on the origin/composition of the flow and the way in which it is applied. In general, the assessment is more challenging if the new use is different from the original one. For example, if you don't want to use a wooden table again as a table, but you want to make chopping boards for it in the kitchen. Then you are actually recycling. For more information, see the [chapter on waste or non-waste].

3.2.2Can you make repairs to bought-in parties before reselling them?

Yes. It is important to distinguish between the repair of a waste to a reusable product and the repair of a non-waste. Waste repair is governed by waste legislation. This is not the case for the repair of a non-waste. The assessment of whether something is waste or non-waste depends on several points. See also [Section 2.2] and [Question 3.2.1].

For waste electrical/electronic equipment repair, this concerns waste electrical/electronic equipment repair. The Waste Electrical and Electronic Equipment Regulation (RAEEA) is then relevant. The aim of this scheme is to contribute to the sustainable production and consumption of electrical and electronic equipment. It contains rules on the proper processing of electric and electronic equipment (Article 11 Raeee). For certain treatment operations, a CENELEC declaration of conformity, also called a certificate, is required (Article 11(3) RAEEE). The cleaning, testing, repair, upgrading and refurbishment of electrical and electronic equipment is permitted without a Cenelec certificate. This CENELEC certificate may be required for cannibalisation (removal of components to be used in repair of other equipment), disassembly of usable components and destruction of equipment. For more information, please see the ILT's Cenelec flowchart.

3.2.3Are there any rules that prevent you from carrying out repairs of items such as office furniture or computers at a business client?

No. This is not a waste because the repaired device is returned to its original owner. There is therefore no intention from the holder to dispose of the material, as the holder wants to get the device back after repair.

3.3Collection points

Municipalities are required by law to have a recycling centre where residents can dispose of their bulky waste. The competent authority checks that the collection site complies with the general rules. In addition, the Human Environment and Transport Inspectorate (ILT) monitors all waste electrical and electronic equipment (WEEE) operations.

A lot of items are brought to the municipal collection point that could potentially be repaired or reused. More and more municipalities want to see if they can be reused or repaired and to add their options to the collection point. They have several questions about what should and should not be and what is desirable for the environment. They are also wondering whether this is covered by legislation and how to interpret it. For this reason, a guide on continued use for collection points was drafted to help municipalities with this. See the [Guide on continued use for recycling centres].

3.3.1Can a recycling centre and thrift store be present on the same site?

Yes, if allowed for in the municipality's environment plan.

3.3.2Can a closed party bring and sell anything that is still of value to the collection point?

Yes, provided that it is in line with two frameworks: the rules on waste or non-waste and the Market and Government Act. These are explained below. If the waste is also subject to an extended producer responsibility, the recycler must agree on it with the producer organisation.

Waste or non-waste

Materials can only be sold if they are not waste. Or in other words, if the product has reached the end-of-waste status. In order to achieve the end-of-waste status, there must be a recovery operation and the material must comply with the four conditions set out in Article 1.1(6) of the Environmental Management Act for end-of-waste status:

1. the materials are intended to be used for specific purposes;
2. a market or demand exists for the materials;
3. The materials comply with the technical requirements for the specific purposes as well as with the legislation and standards applicable to products.
4. the use of the materials does not have an overall adverse impact on the environment or human health.

The holder of the waste initially assesses whether the four conditions for end-of-waste status are met. Such an assessment can be simple or slightly more complex depending on the origin/composition of the flow and the way in which it is applied. In general, the assessment is more challenging if the new use is different from the original one. For example, if you don't want to use a wooden table again as a table, but you want to make chopping boards for it in the kitchen. Then you are actually recycling. For more information, see the [chapter on waste or non-waste] and the [Guide on continued use at collection points].

Market and Government Act

The Market and Government Act (Wet Markt en Overheid) imposes restrictions. A municipal public interest decision can be taken to ensure that economic activities or benefits are no longer placed under the Market and Public Administration Act (Wet Markt en Overheid). A little more explanation is provided below.

If a municipality offers goods or services to third parties on the market, it carries out economic activities. At that time, the State is a market economy operator and enters into competition with private companies. The Market and Government Act then applies. It includes four key State-level rules of conduct in order to prevent a situation of unequal competition between public and private enterprises. These are:

1. public authorities should charge fees for at least the full cost of their goods or services;
2. public authorities should not favour their own public undertakings over competing undertakings;
3. The data obtained from the public service remit may not be used by the public authorities for economic activities that are not carried out in the fulfilment of the public service remit. This does not apply if the data are also available to other public organisations or businesses; and
4. If a public authority has an administrative role in a particular area for certain economic activities and also carries out economic activities itself, the same persons should not be involved in the exercise of the administrative power and in the conduct of the economic activities of the public authority.

In a collection point, the first two points seem to be the most relevant. For full costs, please consider operational costs, depreciation costs, maintenance costs and capital costs). In fact, operation should not be carried out below cost. Article 25j of the Competition Act states that a public authority may not favour a public undertaking. This includes financial favoritism, as well as, for example, using name and figurative mark (marketing), which may place private companies at a competitive disadvantage.

The Municipal Council may decide, by means of a public interest, that an economic activity takes place, or that a public undertaking may be favoured in the public interest. In concrete terms, this means, for example, that a good or service may be offered free of charge or at a price below cost, or that a public undertaking may be favoured.

3.3.3 Is it permitted to repair something that enters waste at the recycling centre in the repair café in the collection point?

Yes, you can. Please note that this is the repair of a waste. This is governed by the laws and regulations described below.

Article 3.156 of the Environmental activities decree [Bal] states that preparing for the reuse of collected or delivered waste is an environmentally harmful activity. Repair of a received waste at a collection point is included. This environmentally harmful activity is not subject to authorisation, but to an information requirement (Article 3.158 Bal). The waste collection point must inform the competent authority of the location and the location of this environmentally harmful activity. The expected start date must also be indicated. In addition, there are a number of general rules that the site must comply with when carrying out the environmentally harmful activity. See Article 3.157 Bal.

The Municipality's environmental plan indicates which activities are permitted in which locations. A repair café on the collection point is permitted if it fits the municipality's environmental plan. In addition, an environment plan may contain general rules related to an activity or a requirement that an environmental permit is needed for a specific activity. Therefore, check the environment plan of the municipality where the collection and repair café is located.

In the case of repair of waste electrical and electronic equipment, this involves the repair of electrical and electronic waste. The Waste Electrical and Electronic Equipment Regulation (RAEEA) is then relevant. The aim of this scheme is to contribute to the sustainable production and consumption of electrical and electronic equipment. It contains rules on the proper processing of electric and electronic equipment (Article 11 Raeee). For certain treatment operations, a CENELEC declaration of conformity, also called a certificate, is required (Article 11(3) RAEEE). The cleaning, testing, repair, upgrading and refurbishment of electrical and electronic equipment is permitted without a Cenelec certificate. This CENELEC certificate may be required for cannibalisation (removal of components to be used in repair of other equipment), disassembly of usable components and destruction of equipment. For more information, see the ILT's Cenelec flowchart.

After the repair has been completed, the product is in principle ready for re-use provided it meets the requirements of the end-of-waste conditions. To do so, check out the answers to [question 3.3.4] and the [chapter Waste or non-waste].

3.3.4 Can the collection point be used as a sales facility for new products made from waste streams there?

Yes, you can. The Market and Government Act (with which the Competition Act has been amended) applies when a government carries out an economic activity. This means that there is a market with other providers and a potential competitor. The public authorities would then have to comply with the four competition rules: pass on all costs, avoid favouring public undertakings, use data under the same conditions and separate roles. The Authority for Consumers and Markets (ACM) monitors compliance with these standards of conduct. See also the answer in [question 3.3.2].

The question of whether something is waste or non-waste also arises here. Materials can only be sold if they are not waste or going to be waste. Or In other words, if the continued use is concerned or the product has reached the end-of-waste status. To achieve end-of-waste status, the material must be a recovery operation and comply with the four conditions set out in Article 1.1(6) of the Environmental Management Act for end-of-waste status:

1. the materials are intended to be used for specific purposes;
2. a market or demand exists for the materials;
3. The materials comply with the technical requirements for the specific purposes as well as with the legislation and standards applicable to products.
4. the use of the materials does not have an overall adverse impact on the environment or human health.

The holder of the waste initially assesses whether the four conditions for end-of-waste status are met. Such an assessment can be simple or slightly more complex depending on the origin/composition of the flow and the way in which it is applied. In general, the assessment is more challenging if the new use is different from the original one. For example, if you don't want to use a wooden table again as a table, but you want to make chopping boards for it in the kitchen. Then you are actually recycling. For more information, see the [chapter on waste or non-waste].

3.3.5 Can materials that are still usable be given away free of charge to residents, a thrift store or other businesses?

See [question 3.3.2]

3.3.6Can objects and devices be dismantled for reuse of parts?

In the case of repair of waste electrical and electronic equipment, this involves the repair of electrical and electronic waste. The Waste Electrical and Electronic Equipment Regulation (RAEEA) is then relevant. The aim of this scheme is to contribute to the sustainable production and consumption of electrical and electronic equipment. It contains rules on the proper processing of electric and electronic equipment (Article 11 Raeee). For certain treatment operations, a CENELEC declaration of conformity, also called a certificate, is required (Article 11(3) RAEEE). The cleaning, testing, repair, upgrading and refurbishment of electrical and electronic equipment is permitted without a Cenelec certificate. This CENELEC certificate may be required for cannibalisation (removal of components to be used in repair of other equipment), disassembly of usable components and destruction of equipment. For more information, see the ILT's Cenelec flowchart.

However, other objects and appliances, which do not concern electrical/electronic waste, may be dismantled for reuse of parts. This applies to all materials made of metal, wood, plastics, textiles, paper, cardboard and connecting pieces. This constitutes a recovery of the material in the form of recycling. An assessment of end-of-waste status can be made once recycling has been completed. You can find out more in the answer to [question 3.3.4].

3.4Thrift shops

Second-hand goods are sold in second-hand shops. Second-hand shops provide a longer useful life, contributing to a circular economy. This is because the use of new raw materials is delayed or avoided.

For thrift shops, there may be situations where it is sometimes unclear whether certain activities are allowed. Below are some examples, explaining how to deal with them.

3.4.1Can recycling and recycling shops be on the same site?

Yes, if allowed for in the municipality's environment plan.

3.4.2Are repairs to items brought to thrift shops allowed to be carried out in the thrift shop?

Yes. Goods are offered for recycling during a cycle. The shop only checks on receipt and accepts suitable items. This does not change the fact that a minor repair may still be required. A proper assessment of the possibility of re-use will have to be made on a case-by-case basis. If there is reuse, waste legislation does not apply. However, different rules may apply. To do so, check the environment plan of the municipality where the thrift store is located.

In the case of repair of waste electrical and electronic equipment, this involves the repair of electrical and electronic waste. The Waste Electrical and Electronic Equipment Regulation (RAEEA) is then relevant. The aim of this scheme is to contribute to the sustainable production and consumption of electrical and electronic equipment. It contains rules on the proper processing of electric and electronic equipment (Article 11 Raeee). For certain treatment operations, a CENELEC declaration of conformity, also called a certificate, is required (Article 11(3) RAEEE). The cleaning, testing, repair, upgrading and refurbishment of electrical and electronic equipment is permitted without a Cenelec certificate. This CENELEC certificate may be required for cannibalisation (removal of components to be used in repair of other equipment), disassembly of usable components and destruction of equipment. For more information, see the ILT's Cenelec flowchart. For thrift shops and repair shops, a poster is also produced to indicate what is and is not allowed. Check out the poster on the ILT website.

3.4.3 Is it possible for a recycled company to bring and sell valuable items on the collection point?

See [question 3.3.2]

3.4.4Is a circular company allowed to refurbish electrical/electronic equipment for sale?

Yes, depending on the situation. In the case of repair of waste electrical and electronic equipment, this involves the repair of electrical and electronic waste. The Waste Electrical and Electronic Equipment Regulation (RAEEA) is then relevant. The aim of this scheme is to contribute to the sustainable production and consumption of electrical and electronic equipment. It contains rules on the proper processing of electric and electronic equipment (Article 11 Raeee). For certain treatment operations, a CENELEC declaration of conformity, also called a certificate, is required (Article 11(3) RAEEE). The cleaning, testing, repair, upgrading and refurbishment of electrical and electronic equipment is permitted without a Cenelec certificate. This CENELEC certificate may be required for cannibalisation (removal of components to be used in repair of other equipment), disassembly of usable components and destruction of equipment. For more information, see the Cenelec flow chart issued bythe ILT. For thrift shops and repair shops, a poster is also produced to indicate what is and is not allowed. Check out the poster on the ILT website.

3.4.5Who should the consumer be from when a product is bought in the thrift store?

The Thrift Store. The point of sale of the product is the place where the consumer can go back if the product has defects. Therefore, if the product is purchased from a thrift store, the consumer will also be able to find it there. Whether a thrift store is required to assist the consumer in resolving the defects – such as repair or replacement or return of the purchase price is an assessment of the situation. This is determined by the content of the initial purchase contract. If less details of the product are known at the time of sale and are therefore missing from the contract (e.g., age or if it has ever been repaired), the consumer will also be able to disaggregate less rights. The nature of the sales outlet should also be taken into account: recycled shops are expected to have less substantial expertise than a specialised company. For example, a washing machine: more knowledge can be expected from a specialised washing machine provider than from a thrift store. This is stipulated in Article 7.17 of the Civil Code (conformity requirement). The CMP does not concern consumer law. More information can be found onthe Consumers' Association websiteand on the Consumers' Information Shop website.

3.5Repair cafés

Repair centres, including repair cafés, are set up in more and more locations throughout the country. This initiative comes from citizens themselves, sometimes united in a foundation. The centres run on volunteers and no revenue is generated from the activities. In a repair café, residents can have their goods repaired in a faulty arrangement. The items can be anything, e.g. electric/electronic devices, bicycles, furniture and clothing. Volunteers with appropriate expertise will try to repair these things. The resident is involved and, in some cases, is provided with explanations and instructions. This contributes to the empowerment of citizens. The repair café also serves a social function.

Repair cafés may show situations where it is sometimes unclear whether certain activities are permitted. Below are some examples, explaining how to deal with them.

3.5.1Can something that enters waste be repaired in the recycling centre at the repair café in the collection point?

See [question 3.3.3]

3.5.2 Do I need a CENELEC certificate if I want to repair an electrical and electronic device so that it can be used again?

This depends on it. In the case of repair of waste electrical and electronic equipment, this involves the repair of electrical and electronic waste. The Waste Electrical and Electronic Equipment Regulation (RAEEA) is then relevant. The aim of this scheme is to contribute to the sustainable production and consumption of electrical and electronic equipment. It contains rules on the proper processing of electric and electronic equipment (Article 11 Raeee). For certain treatment operations, a CENELEC declaration of conformity, also called a certificate, is required (Article 11(3) RAEEE). The cleaning, testing, repair, upgrading and refurbishment of electrical and electronic equipment is permitted without a Cenelec certificate. This CENELEC certificate may be required for cannibalisation (removal of components to be used in repair of other equipment), disassembly of usable components and destruction of equipment. For more information, see the ILT's Cenelec flowchart. For thrift shops and repair shops, a poster is also produced to indicate what is and is not allowed. Check out the poster on the ILT website.

3.5.3 Are electric/electronic devices in the repair café allowed to be dismantled for reuse components?

Yes, but please note that dismantling waste is not the same as repairing waste. Disassembly is not performed to restore product to working order and does not lead to continued use of the original function. Disassembly is carried out, inter alia, to use still working parts of a non-repair product for repair of a product to be repaired. There are two legal frameworks:

- First, storage of more than 100 m2 of waste electronic and electrical equipment (WEEE) is an environmentally harmful activity subject to a permit (Article 3.185, paragraph 3, Environmental activities decree [Bal]). In addition, the disassembly of waste is an environmentally harmful activity that requires a permit, except for an article of ornamental or utility that is intended for reuse (Article 3.186 Bal).
- In addition, in the case of electrical/electronic equipment, a CENELEC certificate is required for dismantling serviceable components. See also [question 3.5.2].

3.5.4 Who should be the consumer with as a product repaired in the repair café takes out again after the repair?

It is obvious that repairs still within the commercial guarantee period will be carried out via the original point of sale. It is also sensible to return to the original seller if a product breaks before the usual conditions. A repair contract with a repairer who does not act for the seller is a contract of assignment. What you can expect from a repair depends on the individual circumstances. Repair cafés do not allow you to expect too much, as it is a free and voluntary citizens’ initiative. Repair cafés can therefore also generally not be held liable for repairs carried out. Of course, a consumer can go back to the repair café if something goes up again. The CMP does not concern consumer law. More information can be found on the Consumers’ Association websiteand on the Consumers’ Information Shop.

3.6 Start-ups

In the transition to a circular economy, a lot of entrepreneurship focused on the upgrading of waste streams is emerging. Enthusiastic, often small businesses are often assisted by the municipality, for example by providing a site for their activity.

Start-ups are subject to the same rules as established entrepreneurs. The difference with established entrepreneurs is that start-ups usually have less knowledge and relatively little time to go through the necessary procedures. Compliance with laws and regulations, including those related to repair and reuse, is a relatively long time-consuming process for small businesses. This means that they deserve specific attention in this section. Below are some examples, explaining how to deal with them.

3.6.1 As a start-up entrepreneur, do you need a permit when you turn waste into products?

This is what comes next. All activities involving waste are subject to a permit requirement. Chapter 3 of the Living Environment Law (Activities) Decree (Bal) sets out the exceptions that apply. In addition, a specific provision may be made in the environment plan in the municipality of residence. Contact the competent authority, for example your municipality or the environment section, to find out if you need a permit.

3.6.2 Are you allowed to make a product from waste as a start-up?

Yes, provided you meet the legal requirements, namely a permit to receive and process the waste. The waste will be used in your production process. In addition, end-of-waste status is required for the final product to be available on the market. In order to achieve the end-of-waste status, the recovery operation must be present and the material must comply with the following conditions (based on Article 1.1(6) of the Environmental Management Act):

1. the materials are intended to be used for specific purposes;
2. a market or demand exists for the materials;
3. The materials comply with the technical requirements for the specific purposes as well as with the legislation and standards applicable to products.

4. the use of the materials does not have an overall adverse impact on the environment or human health.

The holder of the waste initially assesses whether the four conditions for end-of-waste status are met. Such an assessment can be simple or slightly more complex depending on the origin/composition of the flow and the way in which it is applied. In general, the assessment is more challenging if the new use is different from the original one. For example, if you don't want to use a wooden table again as a table, but you want to make chopping boards for it in the kitchen. Then you are actually recycling. For more information, see the [chapter on waste or non-waste].

3.6.3Who should the consumer be when a product is broken?

Existing consumer legislation (see [chapter overview of legislation]) allows the consumer to have the defective product repaired by the seller free of charge within the guarantee period.[103] After the warranty period, the consumer must pay for repair or replace the product at his own expense.

The European Commission (EC) presented a new proposed Directive Bill on 22 March 2023 to stimulate the choice of repair.[104] This initiative obliges producers to repair product groups 10 years after purchase, at the request of the consumer. The producer may charge a fee for this. This concerns only those products that are subject to Ecodesign legislation. Furthermore, the Directive also obliges Member States to, inter alia, set up a national platform to make it easier for consumers to contact appropriate repairers. In the Netherlands, such a repair register already exists, please consult the website National Repair Register. The EC's proposal aims to make it easier for consumers to repair or have a defective product repaired rather than replace it with a new one.

3.7Retailers

Repair and re-use are increasingly targeted at retail clients.
For example, clothing brands and furniture shops are more likely to offer (free of charge) repair options. Or they sell second-hand goods.

Shopkeepers can experience situations where it is sometimes unclear whether certain activities are allowed. Below are some examples, explaining how to deal with them.

3.7.1Are you allowed to set up a repair corner in your shop?

Yes, you can. Please note that repair activities may be subject to specific requirements. For example, repair of electrical and electronic equipment. To make sure you comply with all the rules, the best way to contact your permit issuer with the Authority is to contact them.

3.7.2Can I distribute free spare parts?

Yes, you can. For example, some furniture shops are already free to re-order small spare parts such as screws, buttons or plugs online. Larger parts can also be ordered frequently. There may be costs involved.

3.7.3Can I take and sell second-hand items as a shop owner?

This is allowed, provided there is reuse of items and no waste intake. In order to determine whether there is reuse or waste, it is important to establish the holder's intention with the items. If the holder releases the items with the aim of giving them a second life, it is likely that the items will be reused and will not be waste. However, it must be assessed that the items are still suitable for reuse. For example, that the product is clean and not broken. A case-by-case assessment of the possibility of re-use will have to be made, based on all the facts and circumstances of the case.

103Under Article 21(1)(b) of the Civil Code, the seller has to remedy a non-compliant product during the statutory warranty period.

104See also cabinet's BNC factsheet on the Common Rules for Stimulating Repair Directive, https://www.rijksoverheid.nl/documenten/richtlijnen/2023/03/22/fiche-2-Directive-common-rules-forencouraging-repair.

If the holder intends to dispose of the items, this is a waste. In this case, the items may only be delivered to persons authorised to receive waste (Article 10.37 WM). If the product can be returned to the market after simple operations, such as checking, repair or cleaning, it is prepared for re-use. If the items are not suitable for recycling, they can be recycled. An assessment of end-of-waste status can be made after preparation for reuse or completion of recycling. For information on waste or non-waste, check out the [chapter on waste or non-waste].

In other words, if a client issues the old items with the intention of disposing of them and not using them more, the waste will be waste. You may only take this material if you are authorised to collect waste in accordance with the rules laid down in Article 10.37 of the Environmental Management Act. If the client's intention is to re-use the items delivered and it is also suitable for that purpose, it is not waste and you may take and sell them again.

4 CMP assessment frameworks

This section does not contain a binding assessment framework for the competent authority. There are also no assessment frameworks for the establishment of decentralised regulations. Legislation and concepts have clarified the legislation and explained the possibilities.

5 Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

This section has been written according to real-life situations. These are expressed in this chapter as frequently asked questions and answers. These questions and answers will be supplemented in the future.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

6 Resources and more information

6.1 Municipalities

Visit the Circular Craft Centreswebsite to find out more about the design of repairs and reuse by municipalities.

Helpful resources include:

- Guidecontinued use forcollection points
- Guide to waste or non-waste

6.2 Entrepreneurs

The website of the Ondernemerspleinprovides more information on the rules that should be complied with as a business owner.

Other useful resources include:

- Grant- and RVO funding guide
- Acceleration HouseThe Netherlands Circular!
- Guidewaste or non-waste

6.3 How do you influence consumer behaviour?

Businesses and municipalities can encourage consumers to repair or reuse products more frequently. To encourage this behaviour, various tools are available:

- Waste prevention menu card VANG-Household Waste
- Reduced consumption of VANG by menu-Outdoor

- Consumers' Association
- ConsumerGuide

Circular Materials Plan Design

Landfilling or recovery

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading 'Assessment frameworks'.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a 'content' or 'bookmarks' in the browser or the PDF reader's left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section 'Tools'.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can't read the text or images? Contact 088-7977102 or the helpdesk's contact form.

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Landfilling or recovery

Landfilling must be reduced as much as possible. This part of the CMP addresses the issue of ‘Landfilling in the transition to a circular economy’. It also describes developments related to landfill, such as landfill capacity, sustainable landfill management, waste mining and landfill aftercare.

The landfill policy and legislation cover landfills, but may also apply to the transfer of waste onto or into the soil outside landfills or the injection of certain waste into the deep substratum. What is important is determining whether waste is landfilled or recovered. This is because different policies and legislation apply.

The chapters provide competent authorities, landfill operators and others who wish to dump or recover waste with an explanation of the applicable policy and legislation. In doing so, the CMP provides the assessment frameworks for the preparation of rules and the granting of authorisations and waivers.

Landfilling in a circular economy
Authorisations and exemptions for landfilling
Authorise waste storage in landfills
Preparing and implementing landfill bans
Injection of waste into gas and oil extraction
Injection of waste into salt caverns
Landfill aftercare

Landfilling in a circular economy

This chapter first addresses the place of landfilling in the transition to a circular economy. It also deals with the distinction between landfilling and the deposition of waste on or into the soil as a form of recovery. Third, it discusses developments such as sustainable landfill management, waste mining and recoverable landfill.

1. Target audience

Waste is dumped in the Netherlands at 21 landfills (see [section 4.1 ‘Capacity regulation review framework’] in section ‘Permits and exemptions for landfilling’ for an overview) driven by 10 operators. These **landfill operators** in particular are those who read the national government’s perception of landfilling in this section. In line with this, this is also relevant for **landfill authorisation** companies.

2. Importance for the circular economy

In a circular economy, we aim to ensure the highest quality of waste management without risks to the environment and human health. As a result, only waste that does not allow for any other processing method is dumped and therefore has to be permanently removed from the material chain. Landfilling is the lowest step in the waste hierarchy and thus the least desirable. There are several reasons for this:

- loss of raw materials that occurs when materials are landfilled;
- emissions from landfilling;
- the required perpetual aftercare to prevent landfills being closed from causing pollution in the environment; and
- the limited possibilities for using a landfill once its landfill activities have been completed.

In addition to key steps such as reducing consumption, sustainable design, reuse and recycling, landfilling is also part of the transition to a circular economy. This is because for the time being, high-quality material use leads, in a number of cases, to residues that are not suitable for other processing than dumping. In the coming period, we will also have to deal with linear economy materials that incorporate substances that we no longer want into the chain. To prevent these residues and problematic substances from polluting the raw materials of the future, landfilling will continue in the coming decades to take steps towards a circular economy. In addition, we foresee that a circular economy for landfilling will also be required to a limited extent because, according to the current state of the art, it is not possible to completely close the material chain at all times. Recycling in the future may also produce a limited residue, which may need to be landfilled. Landfills provide a place where this can be done safely and in a controlled way. In a circular economy, landfilling is also a basic resource for materials that we cannot process in any other way, and it needs to be properly regulated.

In summary: The aim is to limit landfilling to waste that cannot be recovered or incinerated, whether temporarily or temporarily, or whose application or incineration is undesirable. In addition, landfilling must be sufficiently available for the waste that we cannot or do not want to process in any other way. And we do so in an environmentally sound and safe way, at a socially acceptable cost.

3. Policy and legislation

The previous section made it clear that landfilling is part of a circular economy, but should be kept to a minimum and without any environmental or public health burden.

Various laws and decrees contain rules on whether or not to dump waste and on what conditions landfilling is justified. The sections below provide the first overview of the main legal provisions. It also deals with the distinction between landfilling and the transfer of waste to the soil as recovery. Three specific topics are described below, namely ‘sustainable landfill management’, ‘waste mining’ and ‘recoverable jamming’.

If the legislation indicates that a landfill is subject to a permit and/or exemption, the CMP provides the assessment framework for this. This is dealt with in other chapters of the CMP, namely [Chapter permits and exemptions for landfilling], [Chapter ‘Permit storage of waste at landfills] and [Chapter Preparation and execution of dumping bans].

3.1 Landfill work programme

On 11 June 2024, the Landfill Work Programmewas offered to the House of Representatives. The work programme outlines the functioning of the current landfill system and the steps towards a future-proof landfill system. In order to keep landfill available and affordable, landfill capacity must be adjusted in such a way that there is a balance between the landfill capacity required and the landfill capacity available and equipped. This will require actions on the following sub-topics. The moratorium on landfill capacity needs to be adapted to ensure that sufficient landfill capacity is and remains available. Attention is also paid to the desirability of regional distribution of landfill activities. Landfill as a safety net for the waste chain should also be more consolidated through, for example, the storage of an emergency. Attention is also paid to the practical applicability of the current storage time limits and the reuse of landfill space in existing landfills through recoverable dumping and waste mining. It also modernises the technical requirements to which landfills must comply, where necessary, in order to bring them back in line with the state of the art, thus ensuring the lowest environmental impact. Finally, we examine whether and how the government needs more control over the landfill market in order to better address the special responsibility of a public utility function. The cumulative actions outlined in the work programme ensure that landfill remains available for now and in the future.

The work programme sets out the concrete actions for the coming years. These actions will be addressed in coordination with the landfill sector. Where the outcome leads to adjustments of the CMP, we will take this into account in future adjustments.

3.2 Landfill regulations

3.2.1 Landfill Directive

The European Directive on the Landfill of Waste(hereafter the Landfill Directive) largely defines the framework conditions under which waste may be dumped in EU Member States. For example, the Directive includes:

- targets on maximum landfilling of biodegradable waste per Member State
- ban on accepting certain types of waste at landfills
- classification into types of landfill and determination of what waste may be disposed of where it may be disposed of
- provisions on the handling and dumping of highly leachable, hazardous waste,
- rules on landfill waste acceptance (sampling and analysis).
- rules on the temporary storage of metallic mercury in landfills.

In the Netherlands, this directive has been implemented, among others, in the Landfills and Waste Dumping Prohibitions Decree (Bssa) and § 8.5.2.4 of the Environmental Quality Decree.

3.2.2 Landfills and Waste Dumping Prohibitions Decree (Besluit stortplaatsen en stortverboden afvalstoffen)

The first part of the Landfills and Waste Dumping Prohibitions Decree(Bssa) contains the dumping bans and provisions on exemptions from a dumping ban. The second part contains provisions related to landfill planning and landfill acceptance. Some articles are addressed to the competent authority (obligation to attach certain conditions to the licence). Other articles are aimed at the landfill site operator (with direct effect). This Decree and its regulations Regulationon landfill as the only form of waste managementand Regulation on the landfill ban declaration for waste 2013are dealt with in more detail in [chapter on preparing and implementing dumping bans] and in [chapter on landfill follow-up].

The provisions for landfills in the Bssaalso apply to very low radioactive waste. This means, in particular, that very low radioactive waste is subject to the same acceptance requirements as other waste in the landfill.

3.2.3 Living Environment Law (Activities) Decree

Chapter 3 of the Living Environment Law (Activities) Decree(Bal) contains the designation of environmentally harmful activities and what is subject to permit requirements. Landfill is designated in paragraph 3.3.12 of the Bal as an environmentally harmful activity requiring a permit. This permit requirement, and whether or not landfill sites should be authorised, are further dealt with in [Chapter Landfill permits and exemptions].

3.2.4 Environmental Regulation

The following facilities, among others, must be installed during the operation and finishing of a landfill, on the basis of section 8.5.2.4 of the Living Environment Law (Activities) Decree(Bal) and Section 9.3 of the Living Environment Order:

- top and bottom sealing
- the top layer of support
- drainage layers for location of bulk gas pipelines and leachate drains
- Intermediate cover and cover layers associated with the top seal
- landfill embankments • landfill roads.

These legal rules also contain requirements with which facilities must comply in relation to the protection of the environment. These requirements are largely related to soil protection, but also to the collection and processing of landfill gas.

3.3Distinction between landfilling and recovery

The definition of landfill is included in the Environmental Management Act (Wm). In practice, however, the line between placing waste on the soil as a form of disposal (landfilling) and putting it on the soil with the aim of using it as a backfilling, upgrading or foundation material (recovery) appears to be unclear. The distinction between landfilling and recovery is important for a number of reasons. A (non-exhaustive) number of examples is provided in the box below.

The importance of distinction between landfilling and recovery

Landfill or recovery

- Whether a specific activity is subject to permit requirements may play a role (see also [Section 3.4 'Landfill landfill permit requirement'] of the 'Landfill permits and exemptions' chapter) and whether a permit for the operation may be granted (assessment against the minimum standard or the moratorium on landfill capacity ([Section 3.4 'Capacity regulation review framework'] of the 'Landfill permits and exemptions' chapter), • plays a role in determining whether landfill tax should be paid,
- is relevant to the question of whether or not a notification should be given on import/export and, if so, whether consent to the intended import/export is given,
- is important for monitoring and reporting on waste management.

The following two criteria play a role in the question of recovery[1]:

a. The main purpose of the waste provider is decisive. In any event, if the material provider wishes to rely mainly on the material, the material will always be considered a landfill, even if the material subsequently performs a useful function.
b. Recovery can only be achieved if it saves on primary materials that would otherwise have been used for the application in question.

For criterion B, two issues are relevant:
b1. would the work have been carried out with primary material in the absence of suitable waste? b2. Are no more waste than is required for civil engineering purposes?

Both questions aim to ensure that there is indeed a substitution of primary material. Only 'yes' answers to both questions will recovery be considered. In other cases, landfilling is involved and recovery is not considered.

Question b1 should not be confused with whether the waste performs a useful function in the application in question. In the case of applications that would never have been created if it had to be done with primary construction materials, only the supply of the material creates the demand for the application. In such cases, however useful the application may be, the waste will not replace a primary material that would otherwise have been used for the application in question. The latter is an essential condition for a recovery.

It is important to note that b2 does not have to correspond exactly to the quantity of material that would have been used in the case of primary material. It is conceivable that a layer of clay of, for example, 30 cm would normally be sufficient for sealing a landfill. Therefore, if a layer of 50 cm is needed for a similar functional effect of a waste-based covering material, this could be recovery. However, if this alternative covering material is more used than the functional invitation requires, it is still considered a landfill. It is not possible to specify these quantities in general. The assessment should be carried out on a case-by-case basis.

Below are a number of cases on how the distinction between landfilling and recovery is made. These two aspects come back in one form or another.

Waste presented to a landfill is generally offered there because the provider wishes to dispose of it. The provider wishes to withdraw permanently because the product or material no longer has a function for him or her. Because the purpose of the disposer is decisive (criterion a under the previous paragraph), this is by definition considered to be dumping.

During the operation and finishing of landfills, temporary roads, gas extraction layers, intermediate layers, leachate drains, etc. must be installed in the landfill compartments. This is to support the operation of the landfill site in a workable way and to meet environmental hygiene requirements. It is desirable that these facilities be placed as far as possible with waste presented for disposal. After all, these facilities will continue to be part of the landfill body, and it is therefore desirable to use waste that would be disposed of in any event at the landfill in question. Although this waste is

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1 See, inter alia, the judgment of the European Court of 27 February 2002 C-6/00, paragraph 71:
A waste operation may be considered as recovery if its primary purpose is to enable it to fulfil a useful function by substituting for other materials that would have had to be used for that function.

For example, if the Support Layer or as an intermediate cover layer fulfils a useful function, *the Landfill Directive* will still apply. This follows first from the provisions of the Living Environment Law (Activities)

Decree(see box below). These legal provisions include criterion b2 under paragraph 3.3 'Distinction between landfilling and recovery'. In addition, this waste was offered by the disposer to be used for landfill (criterion a of section 3.3 'Distinction between).
Landfill and recovery'). Thirdly, this waste is included in the annual waste registration and the determination of the residual capacity. The fact that these waste substances presented for disposal in a facility have a useful function and have a positive side effect does not make the related use in the facility formally as yet a recovery operation.

Recovery at landfills and the Living Environment Law (Activities) Decree

The following provisions of the Living Environment Law (Activities) Decree are relevant, inter alia, for the question of whether recovery may be involved in a landfill site:

- The use of *land* in a landfill can only be used for its recovery if it is used for the construction of the landfill top seal (Article 4.1269*)*.
- The use of *waste as a building material* in a landfill is to be considered recovery only if the waste is used for the construction of necessary facilities at the landfill and replaces other materials or components that should have been used for that function, and if the processing complies with the minimum standard set out in the waste plan, and if it is material that complies with Section 3.2.25 of the Bal. This means, inter alia, that:
  - The building materials are not applied in quantities greater than those reasonably required to complete the structure in accordance with current civil engineering, construction, environmental, ecological or aesthetic standards (Article 4.1261 of the Bal).
  - Only building materials that meet the quality requirements applicable to building materials as referred to in Article 25d(1) of the Soil Quality Decree (Article 4.1264 Bal) are used.

  The latter means that waste that is not of a quality to be used as a building material outside a landfill can also be disposed of in the landfill alone.
  More relevant provisions are mentioned and discussed in the [Guide to processing operations classification].

However, recovery may be present at a landfill if such facilities cannot be realised with landfill material submitted for disposal, for example because they are not sufficiently offered. In this case, building materials or soil are used. This may be primary or waste. In any case, the deployment must comply with the rules set out in section 3.2.25 of theLiving Environment Law (Activities) Decree and the material must meet the quality requirements of the Soil Quality Decree. This also means that the materials must have a valid environmental certificate. Without such a declaration, it is not recovery but landfilling. See also section 1.8.4.1 'Use in a landfill' of the [Guide to processing operations classification].

3.3.3Apply in noise protection walls, embankments, recreational facilities, etc.

Waste can also be put to the soil outside landfills. Most of these are use in noise protection walls, foundations of roads, construction of a railway embankment, construction of ski slopes or other recreational facilities, etc. This may also include the above-film part of a landfill's finishing coat.

However, the fact that the waste is used in such a work or facility is not sufficient to constitute 'recovery' directly.

- First of all, in order to qualify as recovery, the deployment must comply with the rules set out in section 3.2.25 of the Decree on activities in the living environmentand the material must meet the quality requirements of the Soil Quality Decree.
- In addition, recovery can only be considered if criteria a and b of [Section 3.3 'Distinction between landfilling and recovery'] are met.

3.3.4Making sand or gravel pits or depilation ponds

Restoring natural value can be beneficial by making sand extraction wells or by passing urine from which soil has been extracted shallower. Dredged material or contaminated soil is used regularly for this purpose. Although the filling of deep pools in Article 4.1269(2) of the Bal is qualified as a functional use, this is not automatically a recovery operation. This is because criteria (a) and (b) mentioned in [Section 3.3 'Distinction between landfilling and recovery'] also play a role here when assessing whether recovery is applicable in a specific case. In these cases, the sub-question mentioned above is the most important one

b1. would the work have been carried out with primary material in the absence of suitable waste?

relevant.

Article 4.1269(4) of the Bal states that soil or dredgings that are to be regarded as waste may only be used if there is a recovery operation. Primary materials were extracted from gravel or sand extraction ponds in an earlier stage. Normally, they are not refilled with primary material. As many deposits would therefore never take place with primary material, the use of dredged material or waste soil does not save any primary material that would otherwise have been used. Therefore, in these cases, the operation is not recovery, but landfilling. Therefore, all landfill regulations and policies apply. Only in the case of recovery is the rules set out in the Bbk and the Bal. If landfilling is nevertheless present, the rules in the Bal, Bssa and § 8.5.2.4 of the Living Environment (Quality) Decree, for example, apply. This means, inter alia, that there must be bottom sealing, gas extraction, etc.

The fact that the use of dredged material or waste soil may have a positive impact on, for example, the natural values is a side effect and does not mean recovery. See also the box below for an illustration of this case-law.

Judge assesses perpendiction as landfill

In July 2015, the Gelderland District Court ruled (ECLI:NL:RBGEL:2015:4563) that the primary purpose of disposing of soil in a soil-clearing pond was to dispose of it. With the intended application, claimant's attention was not given to re-designing the earth-moving pool. This does not change the fact that nature conservation values might be restored as a side effect of the applications. Since the purpose of the planned application of soil is its disposal, it constitutes dumping of waste.

The term 'backfilling' is used in CMP only for the purpose of backfilling excavated sites on the surface. For example, quarries that remain after extraction of mineral resources by surface mining[2]. This does not include the filling of underground mines. These fall under 'burial' in the CMP (see below [Section 3.3.6 'Burial']).

In the case of backfilling, the aforementioned aspects (a) (the aim of the eliminating party) and (b) (otherwise primary materials were used for this backfilling) are also relevant. Specifically for this type of case, the European Court of Justice[3] has further elaborated on the distinction between backfilling (= other recovery) and landfilling (= disposal):

1. The classification of the operation must be based on the 'main purpose' criterion.

And backfilling only takes place when:

2. the non-hazardous waste used is suitable for that specific purpose,
3. there is a substitution of non-waste materials that would otherwise be used for this purpose; and

2 This is based on the interpretation of the definition of backfilling by the Administrative Jurisdiction Division of the Council of State in its judgment of 27 December 2018, ECLI:NL:RVS:2018:4206 3 Court of Justice EU, 28-07-2016, No C-147/15

4.the amount of waste used does not exceed what is strictly necessary for the purpose.

Criterion 1 of the Court corresponds to criterion a referred to above in paragraph 3.3 'Distinction between landfilling and recovery'. Criteria 3 and 4 of the Court of Justice constitute an implementation of criterion b referred to in that paragraph. Thus, specifically for backfilling, the Court adds criterion 2 (which also follows directly from the definition of backfilling from the WFD). In the case of suitable material, no further elaboration is required. However, these are sites that generally do not have bottom sealing and monitoring for any leaks into the soil. It can therefore be assumed that waste with a high potential for leaching to the soil is not covered.

In summary, backfilling (= recovery of waste) only takes place when cumulative

- the grooves are located on the surface
- the quarry would have been filled with primary material without waste
- no more waste is used for filling than is strictly necessary
- non-hazardous waste
- the waste used is also suitable for being used as a filler

If one or more of these conditions is not met, then the operation constitutes landfilling.

3.3.6Burial

Within the CMP, ‘burial’ means the stabilisation of underground mines or caverns involving waste. It expressly does *not* include:

- burial of captured CO_2; this is outside the scope of the CMP
- the return of waste water/slurry streams extracted from mining/salt (see Chapters [Injection of waste from gas and oil extraction] and [Injection of waste in salt caverns]).

The Court’s case-law states that ‘the use of waste for the manufacture of mortars used in underground mines to prevent collapse may, under certain conditions, be regarded as a recovery operation’. The waste must be used instead of primary raw materials that would otherwise have had to be used, and there must be a backfill obligation or a backfill necessity. This condition of replacing primary materials also applies to the use of waste as filler in salt caverns.

Criteria a and b are shown again here. The determination of a backfill obligation or necessity is a way of ensuring that, in the absence of suitable waste, the underground chamber in question would indeed have been filled with primary material. If it cannot be demonstrated that there is a backfill obligation or a backfill necessity, the operation is landfilling. In this case, the acceptance conditions for underground landfills in the Decreeon landfills and waste dumping prohibitions(Bssa) are relevant.

3.4Sustainable landfill management

The usual approach for landfills is to ensure that the owner of the landfill first ensures proper bottom sealing, and then landfill waste until it reaches its full capacity. Once a landfill/landfill is full, sealing with an impermeable top layer is applied. The waste deposited is then completely isolated. The closure of the environment slows down or even stops all kinds of natural processes. This reduces the risk of emissions to the surrounding area. However, these may still take place if the insulation becomes defective. The result of this process is therefore that soil protection facilities must in principle be managed and inspected for eternity. In addition, the waterproofing system should be changed periodically. The landfill site also allows other functional uses only to a limited extent, up to the length of days. The provinces are responsible for the perpetual aftercare of landfills. This means that provinces must ensure that a landfill is permanently monitored after closure for possible emissions to the environment, that the top seal is regularly maintained and/or replaced, etc. Due to all the requirements for closed landfills, the aftercare of landfills is costly and places a duty of care on future generations.

The approach to sustainable landfill management is not to isolate waste as much as possible, but it is precisely through the forced addition of water and air to a landfill site that encourages the biodegradation processes in the landfill. The aim is to bring the landfilled waste to a stable situation in a relatively short period of time. This reduces potential future emissions even if the insulating devices were to be faulty. At the same time, leachate collection and landfill gas capture are still functioning well during this forced stabilisation, and proper monitoring and monitoring is put in place. The initial expectation was that degradation would take around 10 years before a stable situation that would no longer require intensive monitoring and management. This has since been revised upwards on the basis of the pilot exercises carried out.

On 1 July 2016, the Green Deal on Sustainable Landfill Management was signed by the Dutch government, provinces and the waste industry. Three landfill sites throughout the country are subjected to 10-year experiments with new landfill body management methods as described above. The pilots are carried out at the Hollands Kroon landfill sites (Wieringermeer) and Braambergen (Almere) by Afvalzorg and Kragge II (Bergen op Zoom) by Attero. Project results and progress are shared via the sustainable landfill management website.

As of 1 July 2016, the Landfills (Soil Protection) Decree (rules now in § 8.5.2.4 of the Environmental Quality Decree) and the Closed Post-Care Phase Regulation landfills were adapted. Although this regulation expired on 1 January 2024 and has largely been transferred to the system of the Environment and Planning Act, Chapter IIIa of the Decree and Chapter 5a of the Implementing Regulation continue to apply to experiments involving sustainable landfill management until:

- 1 July 2027, or
- a date to be set by Royal Decree between 1 July 2027 and 1 July 2029

This is stated in Article 8.2.20 of the Decree implementing the Environment Actand in Article 4.1.8 of the Order implementing the Environment Act.

3.5Waste mining and recoverable landfilling

Deposited materials can be (partially) made available again through waste mining and recordable landfilling. Waste mining opens old landfills or boxes, sorting materials and otherwise processing them, e.g. through recycling. The concept of 'returnable deposit' means that a current cannot be processed in a higher quality than that of 'landfilling', but where it is expected to be able to do so in the future, is sent to landfill separately. Waste mining and recoverable landfilling both aim to optimise the return of materials to the chain. Both contribute to achieving a circular economy and to reducing the extent to which used raw materials are lost. The advantage of both is that, if part of the material already deposited is recovered from the landfill and returned to the chain, once used landfill capacity becomes available again and can be marketed again. However, the waste is subject to a waste tax or waste tax at the time of the initial deposit of the waste.

Waste mining and retrievable dumping must also be carried out in accordance with the applicable laws and regulations and must fit within the site's permit. However, there is no legislation prohibiting waste mining or recordable landfilling. The competent authority may therefore authorise this and issue a licence for it.

However, it is relevant to note that there are substantial differences between the two activities.

- Technological innovation now allows waste that was previously landfilled to move up the R ladder. In doing so, some of the materials in the landfill can be re-used in the economy. However, in the case of waste mining, there is always a risk that materials that can be better off will also be deposited in the landfill area in question. Examples include asbestos, explosive waste, low radioactive waste or other hazardous waste. Waste mining consists of landfill compartments where many waste types are mixed. This requires more operations to separate applicable materials. A larger proportion will also not be suitable for reuse and will therefore need to be returned to landfill.
  Taken together, these aspects imply that the Kingdom views some restraint on waste mining. When assessing waste mining initiatives, the competent authorities are advised to pay close attention to the presence of materials that you would prefer not to dig out of a landfill. The foreseen increase in this activity due to the growing importance of retaining critical raw materials makes it desirable for waste mining to have a clear policy framework from the State.
- The National Government's vision on the concept of 'returnable deposit' is less cautious. At the point of deposit, this development already takes into account the material's eventual re-excavation once a processing technique becomes available in the future. Therefore, materials that may pose a problem when dug up safely again or render them suitable for recovery are not placed in the same area. This will also reduce significantly the extensive sorting and return of a residue. Competent authorities are therefore requested to allow this when an operator wishes to do so (provided, of course, that it is

locally and environmentally acceptable). Given that there is already a business case and some operators are starting it, it is not considered necessary at this point to actively promote it.

The Landfill Work Programmedoes, in consultation with the industry, address opportunities, experiences and bottlenecks, such as maximum waste storage times.

4. CMP assessment frameworks

- When introducing waste into or onto the soil outside regular landfills, competent authorities should check whether the waste is recovery or landfill. In the case of dumping, this authorisation is always subject to a permit requirement and, in principle, is not granted (see also [section Permits and exemptions for landfilling]).
- When assessing waste mining initiatives, the competent authorities will take due account of the presence of materials you prefer not to dig out of a landfill.
- Competent authorities will allow the deposit to be retrieved when an operator wishes to do so and is in a locally environmentally sound manner.

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

- The aim is to ensure that all landfills are ultimately set up in such a way that they can be managed sustainably after closure. The Dutch commitment to ongoing EU regulatory adjustments focuses on the optimal protection of the environment and ensuring that the introduction of ‘sustainable landfill management’ is not hindered. The Netherlands is also considering the implications for the concept of ‘sustainable landfill management’ in the European Commission’s intention to produce BREF documents and BAT conclusions for landfills.
- As waste mining is characterised by both opportunities and concerns, a clear policy framework is being developed in consultation with the industry.
- For recoverable landfill, the experience of operators will help to identify opportunities and bottlenecks, such as, for example, maximum storage times for waste that now require landfill to be (retrievable) instead of long-term storage.
- At the European level, work is underway to update the directive in the short term. The aim of the Netherlands is to ensure that EU-level adjustments do not make developments such as sustainable landfill management, waste mining, recordable landfilling (see all three earlier in this chapter) and aftercare review (see other chapter in the CMP) more difficult.

All of these points may lead to the adjustment of the CMP in due course.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

6. Resources and more information

For more information, please visit: Landfill Work Programme

Circular Materials Plan Design

Authorisations and exemptions for landfilling

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. These PDFs of the draft CMP provide an overview of the layout of the future website but do not yet contain the corresponding functionalities. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The term enclosed in the text refers to concepts for which the website has a look-out. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

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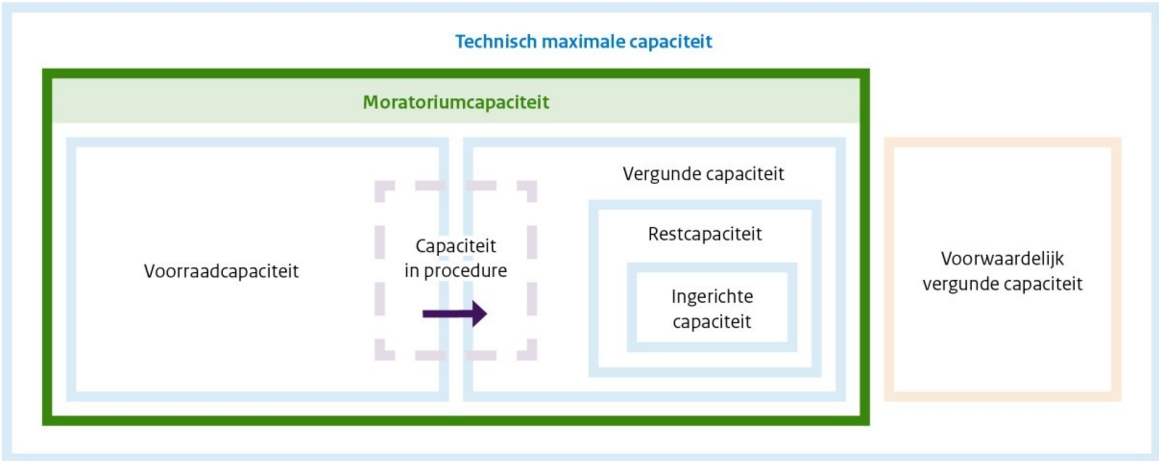
Authorisations and exemptions for landfilling

This chapter discusses a number of aspects related to landfill licensing. An important part of this chapter deals with Capacity Planning or the moratorium on landfill capacity permitting. In line with this, we also look at what is known as the 'inventory capacity' and the conditional authorisation of landfill capacity. For the sake of clarity, the figure below shows which capacity types are distinguished in this section. It only concerns the use of the term 'capacity' in the context of landfill. A textual explanation of the different forms of capacity shown in the figure can be found in the box below Figure 1.

Figure 1: Various forms of capacity distinguished in this chapter



Various forms of capacity distinguished in this chapter

- **Moratorium on landfill capacity**: Landfill capacity listed in Table 1 of this chapter, with the principle that no landfill capacity that is not listed in the table is permitted.
- **Procedural capacity**: a capacity that is still subject to authorisation procedures and therefore cannot be legally used at the location in question.
- **Provisioned capacity**: that part of the authorised capacity that is directly suitable for use and that is part of the authorised capacity.
- **Residual capacity**: capacity that is still available at any time and that is made up of the difference between the capacity authorised and the capacity actually used up to the reference point.
- **Technically Maximum Capacity**: the capacity theoretically available if all existing landfills would be used throughout the entire site, up to the technical and planning maximum height.
- **Traded capacity**: capacity transferred from one operator to another through the exchange procedure described in paragraph 4.1 'Assessment framework capacity regulation' .
- **Authorised capacity**: capacity that has completed all permit procedures and that can be used by the operator in total at the relevant site. This may include directly available capacity (provisioned capacity) and capacity that is authorised but still needs facilities to be installed before they can actually use it.
- **Storage capacity**: capacity that does qualify for authorisation to an operator within the moratorium on landfill capacity of the table in section 4.1 'Capacity regulation review framework' but is currently not actually authorised under any of the operational capacity

landfill sites. This capacity exists on paper and can be licensed, but is currently only assigned to an operator and is not linked to any of the landfills in operation.

- **Conditional authorised capacity**: capacity that an operator does not have, according to the table in section 4.1 'Capacity regulation review framework', but is licensed on (one of) its location(s). In addition, the authorisation is subject to the condition that this capacity may be actually used only if the operator has taken over capacity from another operator who, according to the table, is currently in possession of it.

This section only deals with landfilling. For the distinction between landfilling and transfer onto or into the soil as a recovery operation, see the 'Landfilling in a circular economy' section [Section 3.3 'Distinction between landfilling and recovery'].

1. Target audience

For bringing waste onto the soil outside landfills, the content of this chapter is of particular importance for **municipalities/environment services**. These should generally determine whether there has been a deposit or recovery and whether the proposed activity can be authorised.

In the first instance, the policy on landfill capacity permitting is relevant for **landfill permit authorities**. Consequently, **landfill operators** also have an interest in familiarising themselves with this policy.

2. Importance for the circular economy

The aim is to limit landfilling to waste that we cannot or do not want to recover and/or burn, whether temporarily or permanently. This is the logical effect of a circular economy, where we want to keep materials as long as possible in the material chain. In addition, landfilling must be sufficiently available for materials that we are no longer able or willing to process in any other way. It must be possible to dump in an environmentally sound and safe manner and at a socially acceptable cost.

We aim for a financially sound landfill sector that is able to pay all necessary facilities for landfilling at no risk to the environment and human health, now and in the future. On the one hand, it must be avoided that landfill capacity becomes too large and therefore that landfill is too cheap. On the other hand, landfill capacity or the number of locations or operators should be prevented from being too small and, therefore, landfill too expensive or not sufficiently available. A level playing field for all operators is also desirable. Finally, it is necessary for public authorities to have sufficient tools in place to ensure that unnecessary material is not dumped, but that dumping is sufficiently easy and at acceptable costs in cases where we have to rely on landfilling.

3. Policy and legislation

It follows from [Landfilling in a circular economy chapter] that landfilling is part of a circular economy, but should be kept to a minimum and landfilling takes place with minimal environmental and public health burdens. This also calls for a healthy sector and good tools. Various laws and decrees lay down rules on whether or not waste can be landfilled, or on the conditions under which landfilling is justified. If the legislation indicates that a landfill is subject to a permit and/or exemption, the CMP provides the assessment framework for this. This section provides this framework for a number of situations.

First, it discusses the rules for the transfer of waste onto or into the soil outside landfills.

The chapter then focuses on landfill in landfills. It deals with landfill as a public utility function and the associated role of the State. We then describe the permit requirement for landfill sites. In the authorisation of landfills, capacity regulation is an important issue and this is therefore addressed as a third issue. We conclude with a number of specific aspects such as inventory capacity and conditional landfill capacity authorisations.

3.1 Landfill work programme

On 11 June 2024, the Landfill Work Programmewas offered to the House of Representatives. The work programme outlines the functioning of the current landfill system and the steps towards a future-proof landfill system. In order to keep landfill available and affordable, landfill capacity must be adjusted in such a way that there is a balance between the landfill capacity required and the landfill capacity available and equipped. This will require actions on the following sub-topics. The moratorium on landfill capacity needs to be adapted to ensure that sufficient landfill capacity is and remains available. Attention is also paid to the desirability of regional distribution of landfill activities. Landfill as a safety net for the waste chain should also be more consolidated through, for example, the storage of an emergency. Attention is also paid to the practical applicability of the current storage time limits and the reuse of landfill space in existing landfills through returnable landfills and waste mining. It also modernises the technical requirements to which landfills must comply, where necessary, in order to bring them back into line with the state of the art, thus ensuring the lowest environmental impact. Finally, we examine whether and how the government needs more control over the landfill market in order to better address the special responsibility of a public utility function. The cumulative actions outlined in the work programme ensure that landfill remains available for now and in the future.

The work programme sets out the concrete actions for the coming years. These actions will be addressed in coordination with the landfill sector. Where the outcome leads to adjustments of the CMP, we will take this into account in future adjustments.

3.2 Landfilling or transfer outside of landfills

Municipalities and provinces can make decisions for landfilling or depositing waste outside landfills. For example, a person might want to use waste to fill a hole in the ground, mute a ditch or touch a embankment. This section explains which legislation is at stake and requires verification of decentralised rules.

Landfill is defined in Article 1.1(1) of the Environmental Management Act(WM) as 'the bringing onto or into the soil of waste for the purpose of leaving it there'. Landfilling waste outside landfills is undesirable and therefore prohibited. However, there may also be cases of recovery of waste on or in the soil (for this distinction, see above in this chapter). This can be allowed under certain conditions. Anyone wanting to put something on or into the soil must always answer the question of landfilling or recovery first. The competent authority must check this when taking a decision on authorisation or exemption. For the distinction between landfilling and transfer onto or into the soil as a recovery operation, see the 'Landfilling in a circular economy' section [Section 3.3 'Distinction between landfilling and recovery'].

Under the Environment and Planning Act, the dumping or bringing into the soil of commercial waste, hazardous waste and household waste is divided between the Living Environment Law (Activities) Decree(Bal) and the Environmental Management Act (Wm).

- The dumping of business waste and hazardous waste at a landfill is designated in Articles 3.84 and 3.85 Bal as an environmentally harmful activity subject to permit requirements. See the other sections of this chapter for more details.
- The deposition of business waste or hazardous waste on or into the soil is designated as an environmentally harmful activity requiring a permit in Articles 3.40b and 3.40c of the Bal. This means that dumping or putting into the soil is prohibited unless the company has a permit to do so and complies with all the obligations. The BAL also includes, in a number of other places, rules on the deposition of specific waste on or into the soil. For example (without limitation; see Article 3.40b Bal for all cases) for the application of soil (Section 3.2.26 Bal, including filling in deep pools), building materials (Section 3.2.25 Bal) and fertilisers (Section 3.2.20 Bal, including sewage sludge).
- Article 10.2 WM prohibits the dumping or bringing onto or into the soil of household waste. This is not yet collected or delivered household waste. This is the case if a person wants to leave their own household waste, on their own premises or elsewhere on or in the soil. The Provincial Executive may grant an exemption from this prohibition on the basis of Article 10.63(2) WM. However, this is undesirable from an environmental point of view and in light of the transition to a circular economy. Municipalities and provinces should take into account the assessment framework in the chain and waste plans for the relevant wastes in the CMP when granting these permits and waivers. They should also take into account the CMP when drafting rules in the environment, environment or waste regulations and set out the assessment framework in [Chapter on decentralised rules]. Rules should not be set for waste for which and to the extent that exhaustive national rules already exist, such as for the application of soil, dredged materials and building materials.

3.3 Landfill as a public utility function

It must always be possible to dispose of waste in an environmentally sound and safe manner at a socially acceptable cost, if there is no alternative option or option. This applies both to residual and other waste that cannot (yet) be recovered or incinerated, and to waste which is usually recovered or incinerated, but of which the processing is at a standstill (whether temporarily or not). In the latter case, landfill is referred to as a last resort. It is also important to ensure continuity for the environmentally sound management of waste. This means that sufficient capacity will continue to be available. Landfill is therefore classified as a public utility function and landfills are, for these reasons, essential social provisions, the continued existence of which must be absolutely guaranteed.

The State has a special responsibility if it endangers the maintenance of existing, necessary landfill capacity or if it fails to realise new, necessary landfill capacity. This does not mean that the State itself has to exploit landfill capacity, but rather that it takes the appropriate measures or creates conditions for maintaining or creating the necessary capacity. The measures apply to the overall landfill capacity, i.e. at macro level. They may occasionally also apply to individual businesses, for example if policy changes are causing problems in landfills. The State also sees it as its responsibility to reach agreements with the sector on how to fill in their backstop function. This also includes having sufficient storage space available in case waste cannot be temporarily incinerated or recycled due to a disaster. See further [Landfill Waste Storage Permits].

Landfill as a public utility function means that in addition to having sufficient capacity, it must be certain that landfill is and will remain affordable. This will require actions on three sub-topics. This involves sending charges on gatehouses, the after-care system and the waste tax. All three topics are addressed within the Landfill Work Programme. For the costs of aftercare, reference is also made to [Landfill aftercare chapter] in the CMP.

3.4 Landfill site permit requirement

Chapter 3 of the Living Environment Law (Activities) Decree(Bal) contains the designation of environmentally harmful activities and what is subject to permit requirements. The Bal (Article 3.3.12) designates the environmentally harmful activity (Article 3.84) and the activities that require a permit (Article 3.85);

I. operation of an IPPC installation for the landfilling of waste, referred to in the category 5.4 of Annex I to the Industrial Emissions Directive (IED);
II. operation of another environmentally harmful installation for the purpose of dumping industrial waste or hazardous waste in a landfill (this involves dumping at a location not designated in category 5.4 Bal, e.g. due to dumping of less than 10 tonnes per day)

It follows from the two aforementioned articles of the Bal together that the operation of a landfill is always subject to permit requirements.

3.5Capacity planning at national level

Important is the capacity needed to carry out the public utility task. Capacity planning is required for landfilling waste.

On the one hand, sufficient landfill capacity is necessary. The Netherlands wishes to be a landfill site (national self-sufficiency), with the exception of some specific waste substances for which no landfill facilities are available in the Netherlands. This means that, in principle, waste generated in the Netherlands that cannot be recovered or incinerated must be landfilled in the Netherlands. This means that the Netherlands must have sufficient capacity to meet its own landfill needs. It also takes into account the time needed to achieve new landfill capacity (see box). In addition, sufficient operators must remain in operation to ensure that market forces are sufficient.

Criteria for determining sufficient landfill capacity

The minimum landfill capacity required at national level is determined as follows:

- As a hard guideline, permits for at least 6 years of necessary landfill capacity are used at any time during the planning period of the CMP (2025-2037). This is the so-called 6year criterion. This is reviewed annually by the State.
- The creation of new landfill capacity is time-consuming, given all the planning and licensing procedures involved and the work required to equip a new site with all the necessary facilities. For this reason, in addition to the 6-year requirement, it will also be examined whether there is sufficient landfill capacity at the start of the planning period for the next 6-year planning period. It also takes into account the capacity currently in procedure and the stock and traded capacity. This is the so-called 12-year criterion. The moment of the review is when the CMP enters into force.

On the other hand, too high a capacity is not desirable either. There are a number of reasons for this, including at least:

1. An unnecessarily large area for the future.
2. A possible undesired pull effect on material that could have been processed differently. This would lead to an additional considerable enforcement effort to limit landfilling to waste for which processing other than landfilling is really not an option.
3. Unpredictable landfill prices that could jeopardise the sector's profitability, with associated financial risks for landfill operators and provinces.
4. This sends a wrong signal about the transition to a circular economy.

The necessary capacity planning at national level means that landfills are only allowed with one of the capacities listed in the table in section 4.1 'Assessment framework capacity regulation'. For the further elaboration of this so-called 'moratorium on
landfill capacity', reference is made to that section. For waste treatment, the EU's Waste Framework Directivestipulates the principle that waste can be processed near its generation. It is relevant, however,

that the Netherlands is considered as a single region for the implementation of this proximity principle. Therefore, waste management is not subject to any geographical limits within the Netherlands. Waste may be freely transported throughout the Netherlands without any restrictions when crossing municipal, provincial or regional boundaries. As regards landfill capacity planning, it is therefore emphasised that it is regulated at national level (see also box). It is therefore not up to regional or local authorities to determine that landfilling is not part of a circular economy and, on that basis, to decide that they no longer wish to authorise local capacity.

When the CMP enters into force, a review shows that the 12th year criterion (see box) is still met, but the timing is approaching this. In conclusion, we expect the first time to be a trend that could be between the median and the conservative scenarios, and between the median and the ambitious scenarios in the somewhat longer term. Therefore, at present, both the 6- and 12-year criteria are not at stake.

Assessment of available landfill capacity

The landfills had, by 31 December 2023, a residual directly available capacity of 20 604 874 m^3 (value [Table 1] in section 4.1 'Capacity regulation review framework' of this chapter with correction for the 2023 landfill volume). The total capacity available, including capacity, is 30 917 411 m^3. With an average specific weight of dumped waste of 1.35 tonnes per dumped cubic metre, this corresponds to a capacity of 41.7 Mton.
To test against the 6- and 12-year criteria, we use the three scenarios (RHDHV, 2022)[1] for the development of waste to be landfilled, and set a starting date of 1 January 2026. These scenarios are applied on the basis of the average quantity paid in the period 2019-2023.

- Under the conservative scenario, the annual landfill volume (including the use of waste as construction materials in the landfill) will increase by 1.93% compared to the previous year. In this case, we will have landfill capacity of around 13 years from 1 January 2026.
- In the median scenario, the annual decrease in the amount to be landfilled (including the use of waste as building materials in the landfill) is 1.08% compared to the previous year. In this scenario, we still have about 18 years of landfill capacity as of 1 January 2026.
- In the ambitious scenario, the amount to be landfilled (including the use of waste as building materials in the landfill) is reduced annually by 3.92 % compared to the previous year. In this case, we will have more than 25 years of landfill capacity as of 1 January 2026.

For these scenarios, the following remarks

1. In all cases, it is assumed that all capacity currently 'on the shelf' (value [table1] in section 4.1 'Capacity regulation assessment framework' of this chapter) will become effectively available in the coming years. If this were not the case, we would go through the capacity in all scenarios rather than the previous points.
2. With an increasing focus on removing substances from the chain, it cannot be ruled out that in the short term we will deposit a little more recycling residue to keep the raw materials of the future clean. However, the probability of a return to landfill for several decades each year is higher than the previous year, as assumed under the conservative scenario in [RHDHV, 2022]. A first increase in dealing with the 'linear legacy' that reverts to decreases after some time is more obvious.

As stated in the Landfill Work Programmethe intention is to adjust the moratorium in due course. It is still under consideration how new capacity will be placed on the market, how often it will be placed, under what conditions and whether this still needs to be adjusted. However, it can already be said that, in the first instance, extension will only be allowed in landfills listed in the previous table. Only if that is not sufficient is re-opening closed landfills that meet the requirements of § 8.5.2.4 of the Environmental Quality Decree and the Environmental Management Act (Aftercare) Order brought to light. The creation of new landfill sites, both above ground and underground and in surface water, is not yet an issue.

3.6Inventory capacity and conditional authorisation

In relation to regulating landfill capacity, we have two particular aspects. The first is capacity that is on paper but not actually licensed at a landfill (storage capacity). The second is to authorise capacity at a landfill before the operator has obtained it within the rules of the moratorium (conditional authorisation). This section looks into these two particular aspects. For the explanation of 'conditional authorised capacity' and 'inventory capacity', please refer to the framework directly at the beginning of this chapter.

Inventory capacity

The smooth running of the capacity planning described above at the national level requires a clear identification of the capacity available at any given time. However, part of the capacity available in this planning is not licensed to any of the landfills in operation. The existence of this so-called 'inventory' capacity increases the complexity of an effective capacity planning, since it is not certain whether all capacity will be validated anyway, thus creating a 'paper reality'. It can also improve the functioning of the landfill market by effectively authorising stock capacity and by ensuring a balanced distribution of existing capacity among operators.

After consulting the landfill sector on this issue in the context of the Landfill Work Programme (see section 3.1 'Landfill Work Programme'), our aim is therefore to reduce the stock capacity.

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1 Landfill Future Analysis, RHDHV - BI3559-MI-RP-220722-0938, 7 October 2022

- Existing stock capacity must therefore be converted into authorised capacity within two years of the entry into force of the CMP. This can be done at a landfill site of the operator currently holding the storage capacity, but can also be transferred to another operator through trading. Storage capacity that has not been converted into authorised capacity two years after the CMP entered into force will be lost. This capacity will be removed at the next mid-term amendment of the CMP. Deviations from this will only be made:
  - in specific specific cases (e.g. force majeure or if the authorisation procedure is a little longer depending on the fault of the operator), or
  - if, in a subsequent interim change to the CMP, the overall stock capacity volume has significantly decreased and the parties are shown to be in the process of acquiring some authorisation to use existing stock capacity.
- A similar time limit applies to inventory capacity which arises at some point in the future because it appears that a landfill will not be able to use its capacity that was initially authorised. Once removed from the landfill's permit, this capacity will be available as stock capacity for a maximum of two years. When registering this capacity as a stock capacity, the operator provides details as of when the decision to withdraw this capacity from the initial authorisation became final.

Conditional authorisation of capacity

Operators can take over capacity from other operators through trading. The approval of the acquired capacity by the receiving operator must be in parallel with the withdrawal of this capacity from the licence of the transferring party or with the notification by the transferring party of the transfer of inventory capacity to the Ministry of Infrastructure and Water Management. This is because the starting point is the simultaneous adaptation of capacities and authorisations to both parties involved. In addition, it must be clear from which site/operator an acquired capacity originates.

In recent years, capacity has been 'conditionally licensed'. This is to allow capacity to the operator in advance without being clear whether the latter can obtain it anyway within the moratorium. The authorisation is then subject to the condition that the operator may not actually use that capacity until the operator is able to take over the capacity from another operator within the moratorium. This may create a paper reality of capacity under licence compared to the moratorium. It also misrepresents the available landfill capacity, because of the differences between authorised and actually available capacity. This, combined with the realised capacity and the inventory capacity, requires a third set of accounts for the national capacity, where all forms form a piece of the puzzle. As a result, conditional authorisation makes the landfill market management system vulnerable and safeguards the landfill as a public utility function. Furthermore, enforcement issues may also arise when conditional authorised capacity is put into service without having obtained it within the rules of the moratorium. Finally, it is inconsistent with the system of simultaneous adaptation of capacities and authorisations, which was designed precisely to avoid the risks and disadvantages mentioned above.

Conditional landfill capacity authorisations are therefore not desirable. The Work ProgrammeLandfillstates that conditional landfill capacity permits will be discouraged. On the other hand, it is conceivable that operators would like to be certain that they will be authorised to carry out additional capacity before investing in that capacity. Conditional authorisation of capacity can then be a solution. For this reason, conditional authorisation is possible for a short transition period (2 years) and on the condition that the State can maintain an overview of this conditional authorised capacity.

4. CMP assessment frameworks

This section contains the following three assessment frameworks:

- Capacity regulation review framework (section 4.1)
- Framework for the examination subject to conditional authorisation (section 4.2)

- Assessment framework for landfilling outside of landfills (section 4.3)

4.1Capacity regulation review framework

Moratorium on landfill capacity

- only capacities listed in Table 1 below will be authorised.
- landfill sites listed in Table 1 are able to exchange capacity (see below).
- Local and regional authorities must make efforts to ensure spatial planning for the approval of capacities at the landfills listed in the table, whether or not they have been obtained by trading. The question of whether the capacity in question is needed arises only at national level. Any licence withholding is carried out only when local environmental impact prevents it from being granted. Regional sub- or overcapacity is not a test criterion for efficiency under the EMA.

tabel 1: Landfill capacities by province as of 1 January 2023

Groningen	Stainkoeln 2	Operations	824,538	
Total Groningen			**824,538**	
Friesland	Ecopark de Wierde	Operations	720,000	
Total Friesland			**720,000**	
Drenthe	Attero Noord, Wijster	Operations	2,072,243	2.250.000 (1,4)
Total Drenthe			**2,072,243**	
Overijssel	Boeldershoek	Operations	1,508,347	1.366.500 (2,4)
	Top field	Operations	150,898	
	Elhorst-Vloedbelen	Operations	1,802,000	
Overijssel total			**3,461,638**	
Gelderland	ARN B.V.	Operations	749,783	
	De Sluiner	Operations	217,048	
	Please tick	Operations	855,000	
	Sweathorst	Operations	27,000	
Gelderland total			**1,848,831**	
Utrecht	Smink	Operations	680,000	
Utrecht Total			**680,000**	
Flevoland	Sea Asterweg	Operations	1,571,246	
Flevoland Total			**1,571,246**	
North Holland	Boekelerdijk	Operations	373,080	
	Nauernasche Polder	finishing	0	
	Wieringermeer	Operations	480,861	809.126 (2,4)
Total North Holland			**853,941**	
South Holland	Third Merwedehaven	finishing	0	986.911 (3,4)
	Mineralz	Operations	995,000	
Total Zuid-Holland			**995,000**	
Zeeland	Central and Northern Zeeland	Operations	306,490	
Total Zeeland			**306,490**	
North Brabant	Haps	finishing	453,000	
	De Kragge	Operations	885,117	

	Spinder	Operations	4,737,550	
Total North Brabant			**6,075,667**	
Limburg	Landgraaf	Operations	1,810,457	
	Montfort	Operations	815,934	
	Scraping	closed		4.900.000 (1,4)
Total Limburg			**2,626,391**	
Total Netherlands			**22,035,985**	**10,312,537**

The table is based on data provided by landfill operators in the annual survey of the Waste Registration Working Group (SAB). The table has been submitted to the Authority for review through the SAB. Inaccuracies exist in the determination of the remaining capacity. Landfills are not measured every year. In these cases, the residual capacity is determined by deducting the amounts paid in from the last measurement of the residual capacity. If new measurements have taken place, the actual residual capacity may differ from the recorded residual capacity due to the riveting and setting of the landfill body, among other things. The residual capacity may therefore have increased without an increase in the capacity authorised. These small differences fall within the scope of capacity regulation and can therefore be easily exploited.

Notes:
1. Deducted from the original landfill, Attero is still in stock.
2. Deducted from the original landfill and in stock at Afvalzorg.
3. Deducted from the original landfill and in stock at Indaver.
4. This inventory capacity will be lost if it has not been converted into authorised capacity at any of the locations listed in the table 2 years after the CMP entered into force.

Exceptions to the moratorium on landfill capacity

1. Dredging spoil is not subject to the above capacity regulation. The capacity of dredgers is outside the scope of the moratorium and, therefore, its authorisation does not require consideration of landfill capacity. This also applies to the dredging deposits located within a regular landfill.
   No landfill of waste, other than dredged material, in dredged material depots is allowed, as this is covered by the moratorium.
2. The capacity of former landfills undergoing rehabilitation is not covered by the moratorium. These are landfills where no waste was dumped on or after 1 September 1996. However, the condition is that no new waste (from outside the former landfill) is accepted and (returned) disposed of on site. The moratorium on landfill capacity therefore does not prevent the decontamination of former landfills from taking place.
   If waste is accepted and dumped in the course of a decontamination operation of a former landfill and does not originate from the former landfill to be decontaminated, this will constitute new landfill capacity. This cannot be licensed, nor can it be done in cases where capacity already existing elsewhere has been obtained through trading. It is not possible to operate landfills that are not listed in Table 1.

Trading of landfill capacity

Given the relatively low landfill capacity available in certain regions compared to other regions, market players are given the opportunity to regulate the distribution of landfill capacity through trading, without increasing the overall national stock of permitted landfill capacity. Regional undercapacity is therefore not a reason for expanding landfill capacity permitted nationwide and is not an efficiency test under the EMA. The assessment of the overall landfill capacity is done at national level and is reflected in Table 1 of the CMP.

In the event of trading:

- It is only possible to trade landfill capacity if it is indicated in the previous table, in accordance with the footnotes to that table.
- The landfill operator that wants to transfer its landfill capacity to another party must inform its competent authority. If the capacity is not in stock capacity but in permit capacity, the operator does so by submitting a request/application to reduce the authorised capacity of its landfill(s) by the amount to be transferred. The landfill operator that will transfer its landfill capacity to another party will indicate who will take over that capacity.
- In parallel with the capacity transfer procedure of the originating capacity operator, the transferring operator applies to his/her own Competent Authority(ies) to add the capacity to be transferred to the authorised capacity of his/her site(s). The operational provider indicates who will be the source of this capacity.
  Note that it is therefore not allowed toconsider capacity taken over from another person asstock capacity.
- The landfill capacity to be transferred does not necessarily have to be put into service at one new location at the acquiring operator. The (new) owner of the capacity may divide the capacity into several landfills and bring parts of the capacity into several provinces. Naturally, the total capacity expansion requested for several landfills must not exceed the capacity that has been discarded. This is agreed by the relevant competent authorities.
- The party receiving the capacity to be transferred may not put that capacity into service until both the permit of the landfill where the capacity originates (unless the capacity was in stock) and the permit of the landfill(s) from which the

  capacity must be increased, effectively adjusted. To that end, the competent authority(ies) must attach conditions to the authorisation(s).
- The acquisition of another person's capacity does not mean that the capacity is automatically licensed somewhere else. This is because the competent authority will process a request/application to extend a landfill permit in accordance with the normal procedures and will take into account all aspects relevant to such an extension. It is therefore possible that a competent authority will refuse a request/application for the extension of existing landfill capacity with capacity discarded elsewhere.

However, if it is clear that the request/application concerns the trading of landfill capacity, the Authority may not invoke the moratorium in the CMP to refuse the expansion of landfill capacity. The CMP provides for trading and the overall capacity in the Netherlands does not increase as a result of the trading.

- The competent authority of the site from which the capacity originates shall provide in the permit that the capacity to be transferred does not actually expire until it has been authorised at another landfill site and this permit has become irrevocable.
- Any intention to trade will be communicated in writing by the parties concerned to the Director of Sustainable Living Environment and Circular Economy (DLCE) of IenW. This should include at least the capacity and the operators/locations involved in the trading. The communication with the requested information can be sent to: [e-mail address]. The parties concerned will also inform the Director of DLCE in writing when the trading has been formalised, i.e. the traded capacity has been irrevocably reduced for landfill(s) that are transferred from the authorised capacity (except for carry-over of stock capacity) and has been irrevocably added to the authorised capacity of the receiving landfill(s).

Waste mining and recoverable landfilling in relation to the moratorium

For capacities already used and released by waste mining or redeemable landfilling:

- All removable deposits are carried out exclusively at a location listed in Table 1. This return to free capacity is within the limits of the moratorium and can be re-used.
- The capacity released by waste mining of a landfill box at a location listed in Table 1 falls within the moratorium. If a re-operation as a landfill box is not part of a pending permit, for example because it is already a longer closed landfill box, the permit may be adjusted accordingly.
- The capacity released by waste mining of a landfill box at a location not listed in Table 1 is outside the moratorium. Permits for the reinstatement of former landfills will not be granted.

For waste mining and retrievable landfilling, see also [Section 3.5 'Waste mining and recoverable landfilling'] in the section 'Landfilling in a circular economy'.

4.2Framework of assessment conditional authorisation

- From the entry into force of the CMP, when conditionally authorising landfill capacity, it will be included in the permit that it will automatically and irrevocably expire when and to the extent that the permit holder has not obtained this capacity within the rules of the moratorium within two years of the permit becoming irrevocable.
- Competent authorities start a procedure to change these authorisations ex officio upon the entry into force of the CMP, which have conditionally authorised landfill capacity so that conditional capacity ceases if it has not been converted into capacity effectively acquired and unconditionally authorised within the rules of the moratorium no later than 2 years after the CMP enters into force.
- The competent authority notifies the IenW's Director for Sustainable Living Environment and Circular Economy (DLCE) within one month of the permit becoming irrevocable: the size of the conditional capacity authorised, the landfill concerned and the date on which the permit became irrevocable.
- Within one month of the entry into force of the CMP, the competent authorities report to IenW, on a conditional basis, on the extent of the capacity unconditionally authorised and the landfill site concerned before the entry into force of the CMP.

4.3Assessment framework for landfilling outside of landfills

Exemptions for landfilling waste outside landfills are not granted. However, in order for the competent authority to make use of the option provided for in Article 10.63 WM, the derogation procedure must be followed (see [Chapter derogation]).

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

As described above, the existing moratorium on landfill capacity expansion will be maintained with the entry into force of the CMP. This means that, for the time being, no additional landfill capacity may be realised or introduced that is not covered by the current moratorium. However, the moment when the 12-year criterion is no longer met is approaching (see section 3.5 'Capacity planning at national level'). As stated in the Landfill Work Programmethe intention is to adjust the moratorium in due course. It is still under consideration how new capacity will be placed on the market, how often it will be placed, under what conditions and whether this still needs to be changed.

The modification of the moratorium also aims to assess whether the possibility to exchange capacity between landfills should still exist, as it introduces another possibility to obtain new capacity.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

Circular Materials Plan Design

Prevent incineration and landfill of recyclable materials

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading 'Assessment frameworks'.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

This part of the CMP does not contain any assessment frameworks.

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Prevention of incineration and landfill of recyclable materials

This section outlines how to move towards a targeted set of measures to prevent the incineration or landfilling of recyclable materials. It also identifies the first material chains to be addressed and the role of the CMP or its potential in the future.

1. Target audience

Everyone may be affected by measures aimed at preventing the incineration or dumping of recyclable materials.

Sending recyclable materials away from incineration and landfill requires changes throughout the chain. Therefore, this also has an impact on parties upstream of the WIPs themselves. In the first instance, all current 'suppliers of waste for incineration and landfill' could be considered. This includes **waste collectors**, as well as **waste sorters**. Even **producers of waste**, both businesses and citizens, may be affected by efforts to reduce incineration and landfill of recyclable materials. For example, separation at the source of more waste is becoming even more important.

While most actions to reduce incineration and landfill of recyclable materials need to take place earlier in the chain, this is of course also important for **Waste Incineration Plant (AVI) operators and landfill sites**. In the long run, they should see a significant decline in their supply of waste, as advancing the transition to a circular economy will make more and more waste available processing options that are higher-quality and where recycling is more than possible the minimum standard. In line with this, this is also relevant for **waste incinerator and landfill operators**.

2. Importance for the circular economy

In a circular economy, recyclable materials are no longer incinerated. This is observed, among others, in the Netherlands Environmental Assessment Agency's Integrated Circular Economy Reporting 2023:

> *The cycle must be closed by removing 'leakages', so that only non-reusable waste is incinerated.*

The National Circular Economy Programme 2023-2030 (NPCE) also sets the goal that by 2050, the incineration of recyclable materials should be fully historic. In the long run, materials-based incineration bans can be used to achieve this. This is done only as a last resort after all steps have been taken throughout the chain to avoid offering recyclable materials to the incineration plant or landfill. Once the necessary steps in the chain have been taken, it is clear to what extent the CMP can be given a trigger for an incineration ban as a final element. The minimum standard tool may play a role in this closing tool, but the CMP may also be adapted to keep it in line with other tools.

3. Policy and legislation

3.1Origin and initial work

The Cabinet's response to the transition agendas announced that the Cabinet would explore the possibility of banning the incineration of all recyclable waste from 2030. An important question is then what 'recyclable' means. In 2019, a first exploration was carried out by [Gemex[1]] for this purpose. As a follow-up, Royal Haskoning DHVfurther examined how to prevent recyclable materials from being incinerated. These studies conclude that there is no incineration of recyclable materials when working according to best available practices (BBW) throughout the waste chain. It is therefore necessary to ensure that the chain operates optimally according to BBW before implementing any incineration prohibition in its final form.

When presenting this report to the House of Representativesthe State Secretary for Infrastructure and Water Management also indicates:

> *A ban on the incineration of recyclable materials is only feasible if measures are taken to prevent their delivery to waste incineration plants unseparated.*

and

> *An incineration prohibition can be a final part of a chain-oriented measure package.*

3.2The NPCE and its follow-up

In the National Circular Economy Programme 2023-2030 (NPCE), the Cabinet has again stressed the importance of preventing the incineration of recyclable materials. The NPCE includes the following action:

> 'We prevent the incineration or landfilling of recyclable materials by closing a specific material chain with a targeted package of measures. In addition:
> - Focuses on plastic and plastic packaging, paper and cardboard, construction and demolition waste, organic waste and nappies.
> - Focus material-by-material on a combination of targeted actions throughout the chain. Measures explored include a separation, post-separation and/or sorting obligation, collection requirements, certification of sorting processes, financial incentives, and (increase of) mandatory recycling rates through EPR.
> - If necessary, consider an additional lock on the door in the form of a material-based incineration prohibition.*'*

The NPCE therefore explicitly mentions a number of flows that are primarily the focus of attention. For these streams, steps are taken to prevent the incineration (and dumping) of recyclable materials:

- For *construction and demolition waste*, the best available methods for sorting have been developed. As a follow-up to this, a study was carried out [how to implement this]]. In addition, the Ministries of IenW and the Ministry of Interior and Kingdom Relations are jointly looking at circular demolition in order to develop best available practices also at the beginning of the chain. Together, this should lead to better source separation and optimal post-separation of construction and demolition waste.
- For *plastic and plastic packaging*, a study has been carried out on the extent to which this goes into the incineration plant, the source and the possibilities of adjusting. This will help identify where in which chain steps should be taken, and thus improve Best Available Practices to prevent incineration of recyclable materials.
- For *paper and cardboard*, Tauw explored the possibilities for post-separation. On this basis, the focus is on creating outlets for post-separated paper. Please also refer to the [paper and cardboard chain plan] in this CMP.
- *Residual household waste and similar waste from businesses*: As indicated to the House of RepresentativesDutch Parliamentthe development of BBW for construction and demolition waste is a first step. You can also contact

1 Development of 'non-recyclable' criteria in relation to KWD, BSA and GHA, Gemex, 2019

residual waste from businesses and (bulky) household waste is still too much going to the waste incineration plant for recyclable materials. Compared with construction and demolition waste, the centre of gravity of this waste will be stronger at the beginning of the chain (better source separation). The letter to the House of Representativesalready underlined the importance of the VANG-HHA and VANG non-household implementation programmes to encourage municipalities and businesses, respectively, to increase their efforts to recycle various wastes. These programmes also play an important role in the *organic waste* and *nappies* mentioned in the NPCE.
  - For example, within VANG-HHA, the (un)opportunities to achieve more standardisation in collection are explored in order to convey a more uniform message to citizens and businesses. Although here it refers to the 'most suitable collection method' and CDW to the 'best available method', these are in fact the same in both cases but in a different part of the chain – so these activities are perfectly complementary.

◦ In addition, for nappies and incontinence materials, the EPR tool should be used and an accelerated increase in the minimum standard of incineration to recycling. For further details, please see the waste plan nappies and incontinence materials in this CMP.

3.3The role of the CMP

As indicated above, measures must be taken throughout the chain to prevent the incineration or landfill of recyclable materials. Various tools can also be used for this purpose. Part of this (VANG programmes, RPV) is outside the CMP. In other cases (raising minimum standards, adapting rules at source separation), the CMP can play a role. In any case, any incineration prohibition will only complete all of these routes. Whether the CMP also plays a role in this will depend on whether such a ban is implemented through the minimum standard or is intended to take the form of a legal ban.

In the CMP, the initial contribution is still limited to initial steps such as updating the minimum standard for sorting of mixed construction and demolition waste towards theBest Available Methods for Sorting. Further steps – such as the aforementioned increase in the minimum standard for nappies and incontinence materials – will follow only in the event of interim changes to the CMP.

4. CMP assessment frameworks

This chapter does not contain any specific assessment frameworks of its own that are currently to be taken into account, for example, in the authorisation process or in the assessment of decentralised rules.

However, other parts of the CMP contain review frameworks to help prevent incineration or landfilling of recyclable materials. For example, many minimum standards in the chain and waste plans or the guidance on granting exemptions from the landfill ban.

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

It is expected that the minimum standard for nappies and incontinence materials will be changed in the event of a future change in the CMP. As can be seen from the text above, there are many studies ongoing, but it is not currently possible to specify the changes to policies and regulations that will result in them and the deadlines for them.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

6. Resources and more information

The various relevant reports and letters from a House of Representatives are all mentioned in the actual text of this chapter.

Circular Materials Plan Design

Assess forms of recycling

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To submit your views, please use the form on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

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Home > Topics > High-quality processing > Assessing recycling forms

Assess forms of recycling

This chapter elaborates on what forms of recycling we know of and why it is sometimes necessary to distinguish between forms of recycling. It goes on to look at how to distinguish between higher and lower quality recycling.

1. Target audience

Assessing the quality of a proposed form of waste treatment is a crucial part of the work for the **permit issuer** of waste processing initiatives. This section explains how to carry out this assessment.

In line with this, this chapter also applies to **waste processors** and **initiators of new waste management initiatives**. This is to help them answer the questions: how does a permitting company assess my initiative, what reference is made and what my plan is eligible for a permit?

2. Importance for the circular economy

The [guidance tools section] explains why it is important that a circular economy treats waste as high-quality as possible and without risks to the environment and human health. It also indicates that the waste hierarchy and the minimum standard are the frameworks and that recycling is of higher quality than, for example, use as fuel, incineration without energy recovery or landfill.

Often, multiple forms of recycling are possible for the same waste. For example, there may be differences in the type of waste in which sub-streams are ultimately recycled, in the quantity of scrap, in the quality of the recyclate or in the type of application. All this will affect the possibilities to recycle the recycled material again at the end of the (new) application. Not all forms of recycling therefore contribute equally to a circular economy. For example, a form of recycling can score well in terms of direct environmental impact, such as emissions from upgrading and emissions avoided by savings on primary materials, but over several cycles the same form of recycling may be less positive if the material is no longer suitable for recycling in a subsequent cycle.

This means that one form of recycling of a waste can better fit the concept of a circular economy than another form of recycling of the same waste. Achieving a circular economy requires that the recycling step in the waste hierarchy also focus on which type of recycling contributes the most.

3. Policy and legislation

This section looks at the role of recycling in achieving a circular economy. It looks at the relationship between recycling and other forms of recovery, but also in particular different forms of recycling and how to assess which of them should be preferred. In this context, the extent to which a form of recycling contributes to the realisation of a circular economy is important, but not the only one.

3.1Recycling or other recovery

According to the waste hierarchy used in the CMP (see Figure 1 Figure 1), recycling is a form of recovery.

Figure 1; the waste hierarchy within the CMP

Hoofdindeling CMP	Trede afvalhiërarchie in het CMP
Geen afval	a. Preventie / hergebruik
Nuttige toepassing van afval	b. Voorbereiding voor hergebruik
	c1. Recycling van het oorspronkelijke materiaal in een gelijke of wat betreft de vereiste kwaliteit van het materiaal vergelijkbare toepassing, waaronder ook mechanische recycling en chemische recycling in de vorm van 'monomeer chemische recycling' en 'solvolyse' maar niet als 'chemische recycling via basischemicaliën' (*)
	c2. Recycling van het oorspronkelijke materiaal in een niet gelijke of wat betreft de vereiste kwaliteit van het materiaal niet vergelijkbare toepassing en/of chemische recycling via basischemicaliën (*)
	d. Andere nuttige toepassing, waaronder energieterugwinning
Verwijdering van afval	e1. Verbranden als vorm van verwijdering
	e2. Storten of lozen

(*) Naast deze vormen van recycling kent het CMP ook nog de term 'recyclingstandaard'. Dit is een vorm die in het algemeen valt onder c1 of c2 of bestaat uit een combinatie daarvan, maar die in het betreffende sectorplan expliciet als 'recyclingstandaard' is aangemerkt. Op de consequenties van het aanmerken van een vorm van verwerking als recyclingstandaard wordt in hoofdstuk 'vormen van recycling beoordelen' verder in gegaan.

In the CMP, we align the concept of recycling with the Environmental Management Act (Wm) and the Waste Framework Directive (WFD). Important here are:

- Recycling is a form of recovery. This means that recycling can only take place if the use of the waste avoids the use of other (primary) materials. This is an essential aspect of the definition of 'recovery'.
- We refer to recycling only when the material remains available. If the waste is consumed in the operation (e.g. incinerated, used as flocculant, used as a neutralizing agent or chemical reactant), then it may be recovered but not recycled. After recovery, the material as such is no longer present.
- The use as, or upgrading to, or addition to fuels is not a form of recycling. This also applies if the waste is reprocessed into a secondary fuel that is subsequently placed on the market.

3.2Recycling in a circular economy

The pursuit of a circular economy follows two principles:

1. Ensure that raw materials are retained for a subsequent application;

   This means focusing on the form of processing that best contributes to achieving a circular economy.

2. Ensure that waste management and the re-use of materials do not pose risks to the environment and human health;

   The aim is to monitor the quality of the raw materials of the future and to ensure that keeping materials in the chain does not pose risks to the environment and human health due to contamination.

These two principles are derived from the waste policy objectives at European (Waste Framework Directive) and national (Environmental Management Act) level. Both principles ensure the safe, efficient and effective management of raw materials.

3.2.2Recycling of waste is important in a circular economy, but not the only

In order to achieve a circular economy, it is essential to focus primarily on:

[1] reducing consumption, promoting sustainable design and encouraging reuse.

However, focusing also on these aspects will bring products at the end of their life. It is therefore also crucial that materials that have become waste are processed in a way that best contributes to a circular economy.

The [section on guidance tools] addresses the distinction between waste management and the use of the waste hierarchy. It follows that recycling contributes better to a circular economy than forms of ‘other recovery’ such as the use of a waste as fuel. [Section 2 ‘Importance for the circular economy’] already states that not all forms of recycling contribute equally to a circular economy.

Therefore, achieving a circular economy requires that:

[2] as much as possible, the form of recycling chosen is that which (most) contributes to a circular economy.

At least the following aspects play a role in determining which form of recycling contributes most to a circular economy:

2a. How much material can be reused?

On the basis of this, the form of waste treatment that results in the least possible loss/disposal of material that still needs to be incinerated or landfilled, and thus to recyclate to the greatest extent possible, contributes most to a circular economy.

2b. Is it possible to recycle the material several times?

If it is possible to recycle a material several times and save on primary material in several cycles, this contributes more to a circular economy than if the recyclate is only suitable for a single use application and needs to be almost certainly incinerated or landfilled after that application.

2c. Quality of recyclate / environmental gain from savings in primary raw materials

Recycling waste leads to saving primary raw materials. The gains will depend on the environmental impact of the extraction, production, transport and processing of the saved primary raw materials. The level of profit depends on the type of material, the chosen use and the purity/quality of the recyclate, and thus on the type and quality of primary raw materials being saved.

2d. The presence of critical materials

The demand for critical materials is growing worldwide, with the focus on the recovery of these materials from waste. The potential for recovery and the capacity to do so still require attention. Recovery of critical materials from waste will therefore increasingly play a role in the designation of a form of processing as of higher or lower quality. See further [Section 3.6 ‘Critical materials and quality’].

Balancing aspects 2a to 2d is not always straightforward as they do not always lead to the same conclusion. This will be reflected in the next section on defining high-quality recycling.

Aspects 2a to 2d ensure that raw materials are retained for a subsequent application. It is also important that

[3] waste treatment does not pose risks to the environment and public health.

Preventing risks essentially prevents contaminants being returned to the company through recyclate that we would prefer to phase out. A high-scoring route for the aforementioned aspects from 2a to 2c. – and who scores well in terms of contribution to resource efficiency – may not be the most desirable option. In the case of certain contaminants, it is a priority not to return to society, however many of the saved primary raw materials are missing.

Points [1] to [3] play a role in determining the most high-quality form of processing/recycling of a particular waste. However,

[4] what form of recycling is considered policy-most desirable form of waste treatment, in addition to the preservation of raw materials and minimal risks to the environment and human health, other aspects play a role.

These include, for example, emissions or energy use from upgrading the waste to recyclate, the costs to the waste disposer, the way in which the waste is treated in our neighbouring countries and the processing capacity available. This may also lead to a situation in which some form of recycling scores well in terms of contribution to resource efficiency may not be the most desirable option. Such aspects are also taken into account when setting minimum standards in the CMP (see [Section 3.1.3 ‘Other aspects in setting a minimum standard’] in Section ‘Minimum standard for processing’).

3.3High-quality recycling

As indicated in the previous section, high-quality recycling *(the most) is the form of recycling that contributes (the most) to a circular economy.*

This definition of high-quality recycling is quite abstract. [Section 3.2 'Recycling in a circular economy'] states that the quantity of recyclate and the quality of recyclate must at least be considered when distinguishing between higher and lower-quality recycling. In addition, in a circular economy, it is desirable that material can be recycled several times and is thus kept in the chain in multiple use cycles.

For these reasons, the definition of high-quality recycling is:

> <u>The form of recycling maintaining the material as high as possible quality</u> over <u>as many cycles</u> as possible in <u>a material or product chain</u>.

The following three remarks explain this definition:

1. The principles included in this definition are far from aligned. For example, obtaining high-quality recyclate can be put in jeopardy with obtaining as many recyclates as possible. Another application which uses as much recyclate as possible may be stressed by the need to keep the material in the chain over several duty cycles. In addition, it is important that recyclates of different qualities can coexist and thus each can contribute to a circular economy. In one case, there is added value in choosing to use a slightly lower quality recyclate when it avoids more primary material. In other cases, upgrading to a lower level of recyclate, but of the highest quality across more chains, is the most profitable.
2. The definition expressly refers to a material or product chain. This is because it is far from always necessary for the recyclate to be used in the same product in order to meet the requirement of quality. This is primarily a question of the quality of the material and the primary material saved, which does not necessarily mean that the same application, i.e. closed-loop recycling, is pursued (see box).
3. In determining the existence of high-quality recycling, it is important to also monitor the prevention and/or avoidance of other environmentally harmful elements such as greenhouse gas emissions or the distribution of substances of very high concern or other substances of concern through the recyclate. For example, it may be worth processing a material using technique X into lower-quality recyclate, even if a higher quality can be achieved using technique Y, if the use of technique Y leads to increased greenhouse gas emissions or leads to the reduction of undesirable substances of concern.

Closed loop is not always the goal

It was wrong to believe that only if material remains within the same application would high-quality recycling be achieved. The aim of getting material back to the same chain means that uses of material that have evolved in decades into a linear economy are seen as the highest goal. This puts us at risk of unnecessarily prolonged non-circular choices in the past. This is clearly not the line maintained in the CMP. Where recyclate is used in another application where it avoids the same quality of primary material as would have been used in the original application, the use in another application shall not be of lower quality.

For materials where the total amount of recyclate available is not sufficient to replace primary material in all applications, it may even be better to treat <u>less</u> quality overall, but <u>more</u> recyclate in another application. This is the case, for example, when upgrading to be able to use it again in the original application results in a high rate of failure and therefore a lower rate of replacement of primary material. It is then more appropriate to opt for a more substitution of more primary material in the other application and, in the original application, to go for a smaller amount of primary material. This is not the most high-quality input from the materials in question, but is the most likely to contribute to the transition to a circular economy in more applications at present.

So, what is the most high-quality application is customisation. This is the combination of the quality of the recyclate, followed by which and how much primary material is avoided.

The discussion on '<u>closed-loop</u>'*1* versus 'open-loop'<u>2</u> is also up-to-date in <u>literature</u>.

> 'The division between 'closed loop' and 'open loop' is rather logical in a linear economy context, where chains are not linked. However, when the economy as a whole becomes circular, or is redesigned, to be more circular, closed-loop concepts may need to be 'extended' and the 'open-loop' may even be a more resource-efficient option (...). There may even be cases where 'open-loop' recycling produces recyclates of sufficient quality to allow for another application, instead of unnecessarily push-close-loop
> encouraging recycling processes to improve the technical characteristics of recyclates in order to meet the standards of their new counterpart.'

All three points above are case-by-case approaches to determine the most high-quality form of recycling of a specific material or product. In some cases, the distinction between steps c1 and c2 of the waste hierarchy will be conclusive. Otherwise, an mLCA as described in the [Guide to mLCA] may be necessary.

This methodology takes into account which primary material is avoided, how much and how much, and the environmental impact, is to be avoided on several cycles of use. This definition and the principles for each material stream can be further elaborated in material-oriented legislation, following a case-by-case approach. An example of this is the Single-UsePlastic Products Regulation.

1 Closed-loop is a form of recycling in the literature where the material is re used as much as possible in the same application. Concrete rubble must be put back into concrete, glass packaging must be reused in glass packaging, and old roofing must be reused in new roofing.

2 Open-loop recycling is a form of recycling in which the material does not have to return to the same application in person. A PET bottle returns to the next cycle as a fleece-trui, the bitumen from roofing waste are processed into asphalt, old pallets are processed into furniture, etc. Sometimes the subsequent application is different because the recyclate does not have sufficient quality to be re-used in the first application. We refer to downcycling), but we do not have to. A new application may require the same quality of the raw material or sometimes even a higher quality than the original application (i.e. we speak of upcycling).

3.4Forms of recycling in the CMP

3.4.1Forms of recycling in the waste hierarchy

As indicated above in this chapter, not all forms of recycling always contribute equally to a circular economy. The waste hierarchy as employed in the CMP (see [Section 3.3 'The waste hierarchy in the CMP'] in Chapter 'Guidance tools') therefore distinguishes between two forms of recycling.

[c1] recycling of the original material in an application that is the same, or that is similar in terms of required material quality, including mechanical recycling and chemical recycling in the form of 'monomer chemical recycling' and solvolysis[3], but not in the form of 'chemical recycling via basic chemicals'.

These are forms of recycling where the original material again becomes available separately as material of a quality similar to that of the material used for the application before reaching the waste stage. The material is in principle suitable for reuse in the same chain and in a similar way.

Examples include:

- Recovery of glass packaging enabling the manufacture of new packaging;
- Recovery of PET from packaging to make a new PET bottle again;
- Return roofing bitumen as deployable bitumen.

It is about the **quality** of the material and not whether it is actually applied in the same chain. A very different application requiring the same quality is included. See also [Section 3.3 'High-quality recycling'].

The conversion of biodegradable materials into usable compost is considered equivalent to this and is also covered by c1.

[c2] recycling of the original material in an application that is not the same, or that is similar in terms of required material quality, and/or chemical recycling by means of basic chemicals.

This includes all forms of recycling that are not covered by c1. This is the first form of recycling where the material is used to replace other primary raw materials, but is not recovered in pure and pure form. Therefore, the raw materials replaced do not have to be identical to the material to be recycled.

Examples include:

- PET used in a mixed plastic fraction replacing wood;
- In the unlikely event that glass has not been kept separate at the source, it is used as a secondary component of mixed granulate as a building material.

The CMP uses 'recycling' as an overarching concept. If a minimum standard uses 'recycling' without further specification, this covers all forms of recycling, i.e. both c1 and c2. Placing on the waste hierarchy suggests that recycling according to c1 is preferred over recycling according to c2.

3.4.2.1 Forms of chemical recycling and the waste hierarchy

There are several forms of chemical recycling, each with its own capabilities and limitations.

Forms of chemical recycling based on pyrolysis or gasification (chemical recycling via basic chemicals) fall under step c2 of the waste hierarchy. Although the quality of the

3 Technique to feed waste streams into a solvent. Precipitation allows the stream to be recovered pure again. The polymers remain intact and are not broken down into smaller parts, as in the other techniques.

in general, obtained secondary materials are not sub-classified for primary materials, but these forms of chemical recycling are classified under c2 due to their energy use and the fact that some of the input is consumed in the process. For the location of pyrolysis and gasification in a circular economy, see also [Assess thermal processing].

The forms of ‘monomer chemical recycling’ and ‘solvolysis’ fall under step c1 of the waste hierarchy. They are valued equally as mechanical recycling, which is generally desirable but not always possible due to a relatively low use of energy and assets.

3.4.2.2 Recycling focus

The classification in the waste hierarchy also means that ‘monomer chemical recycling’ and ‘solvolysis’ are preferred to ‘chemical recycling via basic chemicals’. If possible, this will be taken into account in the authorisation process. These forms of chemical recycling can play a more structural role in a circular economy than ‘chemical recycling via basic chemicals’.

In some cases, the CMP specifically directs to ‘recycling’ and excludes ‘other recovery’ from the minimum standard of the waste concerned. It is then important to ensure, when granting a licence, that the output of the process is not subsequently disposed of as a fuel or for processing into or into a fuel.

In practice, the distinction between ‘chemical recycling’ and ‘other recovery’ is rather confusing. In particular, ‘chemical recycling via basic chemicals’, mixtures obtained from small chemical units can also be used as fuel, except as a raw material in the manufacturing industry (= *recycling*) (= *other recovery and not recycling*). See further the [Thermal Processing Assessment chapter].

3.5Steer between forms of recycling

Steering within forms of recycling may be necessary to facilitate the transition to a circular economy. Management of a specific form of recycling is carried out in two ways, namely through the minimum standard and the assessment framework for cross-border waste transports.

The minimum standards in the chain and waste plans of the CMP provide a review framework for authorisation. Where the minimum standard is formulated at a certain level of the waste hierarchy, forms of processing where all or part of the waste is processed at a lower level of the waste hierarchy will, in principle, not be eligible for a permit. In many cases, minimum standards in the CMP have been defined at the level of the waste hierarchy. If a minimum standard uses ‘recycling’, this covers all forms of recycling and all are eligible for a permit. However, the CMP also offers the possibility to consider a specific form of recycling as a ‘recycling standard’ in the minimum standard. In this case, only that specific form of recycling is eligible for a permit. The minimum standard and the designation of a form of waste processing as a recycling standard are further elaborated in [Chapter on minimum standard for processing] and the [Guidance on the use of minimum standard].

3.5.2Sending via cross-border waste transport

If a form of recycling is considered more desirable than others in the Netherlands, it may be decided to use the policy (i.e. by amending the minimum standard). It is then undesirable to transfer waste abroad for a ‘lower quality’ form of processing. In such cases, limitations on transportation abroad are included in the chain and waste plans. This is done when the waste is treated in a lower quality place than it would have been if it had been processed domestically. See also [cross-border transport section].

3.5.3Drive in practice – aim for uniform implementation of the policy

In principle, steering for a particular form of recycling is only done on the basis of the CMP. This applies both to prioritisation through the minimum standard and prioritisation in the field of cross-border transport. It is therefore not intended that the authorisation by the competent authorities should be based on their own consideration, which should be of a higher quality than that required by the CMP. This would create an uneven playing field and undermine the uniform implementation of waste policy. This does not apply where an initiator sets the bar in the application itself higher than the one required by the CMP.

See further for working with the recycling standard [Section 3.3 'Setting the minimum standard as a recycling standard'] in Section 'Minimum standard for processing' and [Cross-border transport chapter].

3.6Critical materials and quality

The European Commission defines critical materials as

Metals and minerals of significant economic value for which there is a potential risk of supply.

Currently, 34 raw materials are on the Commission's list of critical materials. This list can be found in the annex to the Critical Raw Materials Act(CRMA).

There is a growing demand for critical materials worldwide. This also leads to an increasing focus on the recovery of these materials from waste. Critical materials are also highly promoted within the EU. The European Commission proposed the Critical Raw Materials Act(CRMA) in March 2023. The aim is to reduce the EU's dependence on non-EU countries for obtaining critical materials.

The policy in the CRMA has a direct link to high-quality waste management. For example, in 2030, 25% of the annual European consumption of critical raw materials should come from recycling[4]. In order to achieve this, the CRMA requires Member States to implement, within three years of its entry into force, national measures that result, inter alia, in:

- Increased and improved waste collection, with high potential for material recovery
- Increased reuse of products and components with a high recovery potential for critical materials
- Increased use of secondary critical materials during production
- Improved material efficiency and recycling technologies for critical materials and their more substitution in applications

In 2022, the Ministry of Economy published the National Raw Materials Strategydetailing the importance of recovering critical materials.

Critical materials are not present in every waste. In certain wastes, the quantity of critical materials is negligible or cannot be recovered. TNO Deltares has [carried out a study on the recovery potential of critical materials for a large number of materials and products]. The results of the study are included in the relevant waste plans in the CMP:

- Metals
- Batteries and accumulators
- Shredder waste

4 https://www.consilium.europa.eu/en/press/press-releases/2024/03/18/strategic-autonomy-council-givesits-final-approval-on-the-critical-raw-materials-act/#:~:text=The%20CRMA%20establishment%20three%20benchmarks,to%20come%20from%20recycled%20materials

- End-of-life vehicles and two-wheeled motor vehicles
- Waste electrical and electronic equipment

The study also looked at techniques to recover critical materials and where they are available within the EU. Waste processors from the above waste plans can use this overview to make choices for developing techniques within the Netherlands or, for example, to cooperate with countries within the EU that have experience with the technique and/or have capacity for recovering certain materials.

4. CMP assessment frameworks

1. Authorisation providers should use the distinction between the forms of recycling only for cases explicitly provided for in the CMP minimum standard.
2. In cases where no minimum standard is included in the CMP, the permit issuer assesses directly against the waste hierarchy taking into account the distinction in forms of recycling contained therein.

Further related assessment frameworks can be found in the [Guide to the use of minimum standard] and the [Guide to the use of mLCA].

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

No developments are currently foreseen that could lead to changes in the review frameworks of this chapter.

More information on the development of the CMP and how stakeholders are involved can be found in the [Chapter on CMP].

6. Resources and more information

For more information, please visit:

- [TNO, R11333 (5 July 2023). Recovery potential secondary critical raw materials based on sector plans in the LAP3.]
- European Critical Raw Materials Act

Ministerie van Infrastructuur en Waterstaat

Waste management monitoring and forecasting

Annex to the CMP

Circulair Materialenplan

Waste management monitoring and forecasting

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

This part of the CMP does not contain any assessment frameworks.

PDFs draft CMP become website

The final text of the CMP will be a website. This guide will then be available as a PDF on the website. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

Status: Circular Materials Plan draft for public consultation

Sender: Ministry of Infrastructure and Water Management

Date: January 2025

Website: circulaire materials plan.nl

Waste management monitoring and forecasting

This annex to the CMP describes the organisation of waste management monitoring in The Netherlands sets out the basic assumptions and (inter)national reports. It only concerns the monitoring of the waste stage of materials and not of other stages in the material chain. In addition, it presents an image of waste management, import and export in the Netherlands and an image of the autonomous growth of Dutch waste.

1. Target audience

This annex is intended as a background information for all those interested in the size and management of Dutch waste streams and in the import and export of waste.

2. Importance for the circular economy

Good waste management is an essential part of a circular economy. The CMP is one of the tools for achieving high-quality waste management. The implementation of the CMP needs to be monitored in order to evaluate the policy in the CMP and to underpin and legitimise any adjustments. This is also required by the European Union. This includes, for example, the European Statistics Regulation (biennial), but also several other directives and regulations require reporting from Member States (yearly).

3. Policy and legislation

3.1 Waste Framework Directive

The European Waste Framework Directive(WFD) includes a number of requirements for the CMP. Article 28(3) states:

> The waste management plans contain at least the following elements (...):
> a. the type, quantity and source of waste generated within the territory, of waste expected to be shipped to or from the national territory, and an evaluation of the development of waste streams in the future

This Annex implements this obligation from the WFD.

3.2 Waste bear monitoring

3.2.1 What is monitoring waste management?

Monitoring is the planned, systematic and continuous collection, processing and presentation of data. These include:

- quantitative or numerical data: these are the ‘numbers’, for example, on how much waste is generated, how it is managed and what the environmental impact of waste and material management is;
- Qualitative data: this includes data on actions, regulatory processes and evaluations.

The results of monitoring can help to understand the achievement of objectives and agreements, support enforcement activities, estimate developments, adjust scenarios and validate assumptions.

3.2.2 Principles for monitoring waste management

The monitoring of waste management is based on the following principles:

1. Data will only be collected to support, legitimise and evaluate the waste and chain policy and to comply with international
   reporting obligations. Data is not collected that is not obligatory or necessary to provide information on policy and regulatory achievements.
2. The aim is for each data owner to provide the data only once to the monitoring system.
3. The monitoring data should be acknowledged by the most affected parties. Only then can decisions be made by everyone, for example on the achievement of task and objectives.
4. Monitoring data must be reliable and accurate, which means that:
   a. definitions are unambiguous as far as possible;
   b. the collection method and data processing are verifiable and reproducible;
   c. there is agreement about the measurement point in the chain;
   d. responsibilities relating to the nature, consistency, availability and processing of the data are clearly described;
   e. the information flows are structured in a clear way.
5. Data is stored, processed and reported centrally.
6. Quantitative data is reported in the annual monitoring report
   (quantities of waste) reported from 2000 to calendar year t-1 where possible. For the year t-1, final figures will not yet be available for several components, for example, because final figures from surveys and the like are not yet known or because monitoring is carried out every two years. The figures for the year t-2 in the reporting for the year t are definitive, however. This means that all figures two years and older must be definitive.

3.2.3Organisation of waste management monitoring

The actual monitoring of the CMP, namely the effective collection, processing and presentation of data, is coordinated by Rijkswaterstaat WVL. This does not mean that Rijkswaterstaat carries out all the monitoring activities itself. Various monitoring activities are carried out by other public authorities, industry associations, businesses, organisations, etc.
Rijkswaterstaat ensures coordination with and between these organisations, so that their activities and results are included in the monitoring process. In this way, the organisations contribute to the monitoring of the CMP in an optimal manner and avoid duplication of efforts.

Rijkswaterstaat WVL has established a central waste database, which stores all the waste data.

Scooperation between organisations

In order to avoid duplication of efforts and data requests that are already available, arrangements are made between various monitoring institutes. Among other things, the CBS collects data on household waste and industrial waste. Rijkswaterstaat WVL collects data on other wastes and on waste treatment.

In addition, as much data as possible is already available for other reasons. Examples include annual environmental reports, reports under Producer Responsibility, data from the ILT on import and export of waste and data already available under the Reporting Decreeon industrial waste and hazardous substances.

Raising the profile of WVL is responsible for ensuring that all the individual data sets are covered in an overall view of the generation and treatment of waste. Based on this overall picture, CBS reports to the EU under the European Statistics Regulation. Reports based on other European legislation (Landfill Directive, Batteries Regulation, etc.) are dealt with by Rijkswaterstaat WVL.

3.2.4.1National reports

The production and processing of Dutch waste is reported on an annual basis. This includes the thermal waste processing and landfill capacity, the level of cross-border waste transport, the overall waste generation in the Netherlands, the level of recovery, the amount of waste that has been disposed of, etc. The overview of this can be found in the Dutch Waste in Figures (NAIC) report. In addition, there are several more specific reports, such as the report of the Waste Management Group in the Netherlands (WAR), which specifically cover landfill, incineration, soil cleaning, processing of dredged material and composting/digestion, reports on the development of the waste charge or on the composition of residual household waste. These reports can be found on the circular waste website.

3.2.4.2International reporting

Several international directives, such as the Waste Framework Directive and directives covering specific waste items such as packaging, batteries, incineration, landfill, etc., contain periodic data reporting obligations. There is also a European regulation on waste statistics. The central waste database at Rijkswaterstaat WVL is organised in such a way that the required data are generated at the required times in the formats required by the relevant directives.

In addition, there are several international organisations, such as Eurostat (the European Union Statistical Office) and the European Environment Agency, which may or may not periodically analyse and review the waste management situation in the different countries. The central database data is also used for these activities.

3.3Waste figures

This section provides an overview of the production and processing of Dutch waste since 2000 to 2022. It also provides an estimate of how this will develop autonomously in the coming period.

The following basic principles were used to develop this image:

- 2022 is the basic year. This is the most recent year for which all data have been known and processed.
- The definition is the same as that used in the ‘Dutch Waste in Figures’ report mentioned in [Section 3.2.4.1 ‘National reports’]. This means that the figures in [section 3.3.2 ‘Waste management in figures up to and including 2022’] o refer to waste produced in the Netherlands and its treatment in the Netherlands or abroad.

Import and export of waste are dealt with separately in section 'Import and export of waste' of this annex.

oexcluding soil, dredging spoil, manure and residues from the treatment of waste that has already been counted.

It has been common practice in the monitoring of waste management in the Netherlands for many years to identify this so-called secondary waste but not to count it in the overall picture in order to avoid double counting. This is because incineration, sorting, shredding, dismantling, crushing, etc. often results in a residue that is subsequently further processed by another waste processor. However, this is always part of the waste that has already been counted. Dredged material, manure and soil are also generally treated as separate streams, as they are covered by other legal frameworks. This principle is also based on the statement that the amounts of waste landfilled that are mentioned in this annex do not correspond to the figures contained in [Chapter on Landfill permits and exemptions] of the CMP. This is because it is based on all waste that ends up in landfills, including residues from the processing of imported waste.

- In accordance with the Environmental Management Act, the autonomous development described in [Section 3.3.4 'Forecast waste management until 2037'] of this annex is carried out over a period of 6 and 12 years.

Therefore, assuming the entry into force of the CMP on approximately 1 January 2026, the year of vision is 2031 for the tables and the images with an outlook towards 2037.

- The autonomous development described in [Section 3.3.4 'Waste management forecast up to and including 2037'] of this annex is based on the expected development of numbers of households, sectors such as construction, traffic, chemistry, etc., starting from base year 2022. These developments have taken advantage of the long-term expectations of the various planning agencies (see below [Section 3.3.4, 'Waste management forecast up to 2037'], of this annex).

There is a range of developments that affect waste generation and processing. Some of these are in the policy described in the CMP, but many are outside. Think of future European regulations, the closing of coal-fired power plants based on the energy transition, the transition to electric cars, a growing focus on circular demolition, RPV or encouraging reuse via craft centres, the extent to which materials will in future be classified as by-products or end-of-waste status, etc. The list of developments that also affect the quantities, nature and treatment of waste is so large and, in many cases, so difficult to quantify, that it is out of date to reflect this in the developments.

In [Section 3.3.2], this chapter provides a short review in figures of the period up to and including 2022. Information on import and export of waste is provided in [Section 3.3.3]. [Section 3.3.4] presents scenarios for the total waste generation from 2022 to 2031 with an outlook towards 2037, including a breakdown on recovery and disposal.

3.3.2Waste management in figures up to and including 2022

The annual production of waste in the Netherlands (excluding polluted soil, dredging spoil, manure and secondary waste) has decreased from 63 Mton in 2000 to 58 Mton in 2022 (see Table 1).
The quantities of waste fluctuated during this period, with peaks of 64 Mton in 2008. Between 2000 and 2022, this represents a decrease of around 9%.

Table 1; Dutch waste production

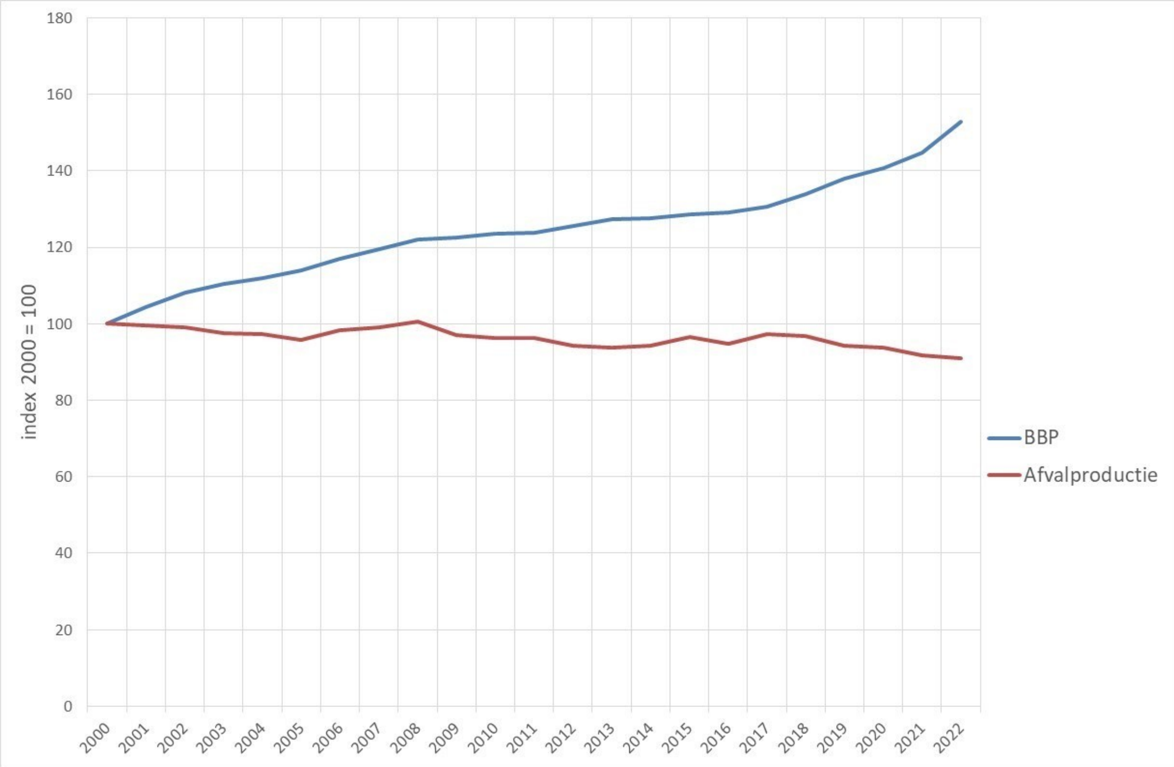
Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mton	63.2	62.9	62.7	61.7	61.5	60.5	62.2	62.6	63.7	61.4	61.0	60.9

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Mton	59.7	59.2	59.6	61.1	59.9	61.5	61.2	59.5	59.3	58.0	57.6

Figure 1 shows a comparison between waste generation and GDP. It follows that there is an absolute[105] decoupling between total waste generation in the Netherlands and economic growth. GDP increased by around 53% between 2000 and 2022. If total waste generation had increased in line with GDP from 2000, around 97 Mton of waste would have been generated in 2022.

105 When waste generation is growing at a lower rate than GDP, we note relative decoupling. If GDP is growing and waste generation is decreasing, this is an absolute decoupling

figure 1; Development of GDP and total waste production in the Netherlands in the period 2000 to 2022 (2000 has been indexed at 100)

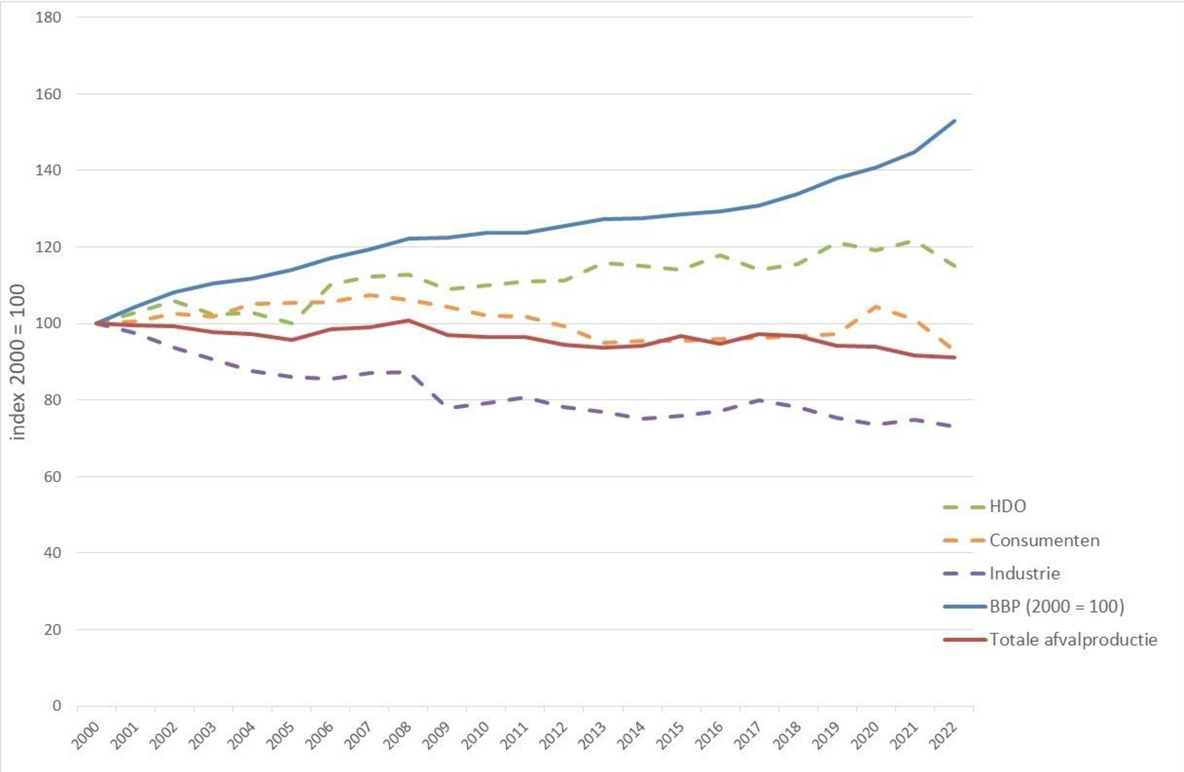


This decoupling is due to a combination of factors: public policies, technological developments, more efficient production, disposal costs, etc. These factors cannot be seen in isolation, for example, there is government policy specifically aimed at waste prevention, but there is also policy that has contributed to the creation of new techniques and more efficient production. In addition, the increase in the cost of removals is also partly the result of government policy.

The developments in waste generation vary from target group to target group. For example, in the case of industrial waste, there has been a decrease between 2000 and 2022. This is in contrast to, for example, the amount of waste from the commercial, service and public sectors (HDO) that is growing. Figure 2 shows, for industrial, HDO and consumer waste, how waste generation developed between 2000 and 2022 in relation to the evolution of GDP and total waste generation in the Netherlands. Consumer waste generation is increasing until 2007, before decreasing again and showing a temporary peak in 2020[2]. In 2022, consumers produced 7% less waste than in 2000.

2 This spike is explained by the Corona epidemic. As people became more at home and less in the office, the amount of household waste grew. This has been reinforced by the fact that many consumers have taken up overdue clean-up activities (finally the attic mucking out) and maintenance at home and garden during this period.

figure
2; Development of waste generation from consumers, industry and the HDO sector in relation to GDP in the Netherlands in the period 2000 to 2022 (2000 has been indexed at 100)



Between 1985 and 2022, there was a clear shift in waste management from disposal to recovery. This resulted in an increase in the proportion of recovery from 51% to 93% in 2022.

This development can be largely explained up to 2005 by the decrease in the landfill proportion. In 1985, 34% of all waste generated in the Netherlands was landfilled. This share decreased to around 2% in 2022.

The increase in the recovery proportion around 2010 is largely explained by the R1 status awarded to several incineration plants in those years. See also Figure 3. The discharge in this figure refers to purified water fraction released after processing of aqueous waste.

3; Waste management of Dutch waste in the period 2000 to 2022

figure

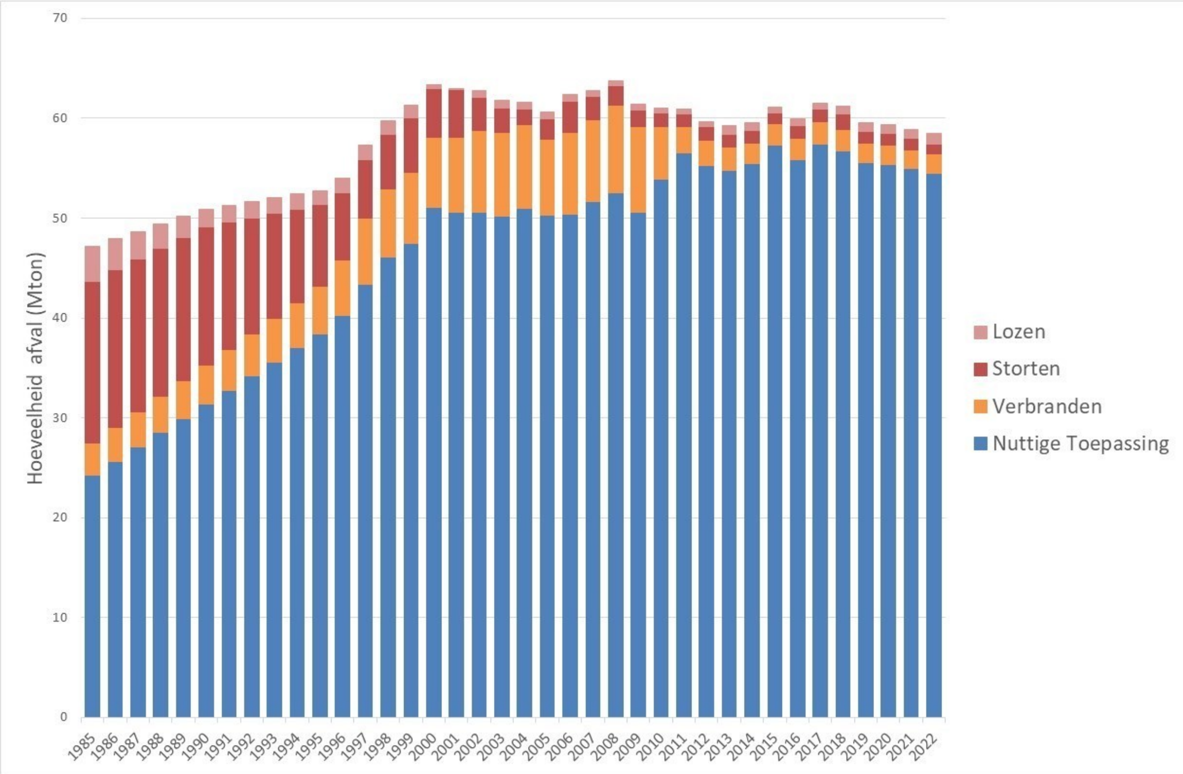


Table 2 shows the recovery volumes in 2022 for the four largest waste-generating target groups. A distinction has been made between preparing for re-use and recycling on the one hand, and recovery including energy applications on the other. These four target groups together account for almost 89% of waste generated and 92% of recovery.

Table 2; Recovery building for the four largest waste-generating target groups in 2022

	Preparing for re-use and recycling (Mton)	Other recovery including energy applications (Mton)	Total production (Mton)
Consumer waste	4.3	3.6	8.0
Industrial waste	11.4	1.7	14.1
Waste from trade, services and government	3.1	2.1	5.6
Construction and demolition waste	21.9	1.2	23.5

3.3.3 Import and export of waste

The previous paragraph concerned the production of waste in the Netherlands (excluding polluted soil, dredging spoil, manure and secondary waste) and its treatment. However, some of this waste is not treated domestically (it is included in the figures of the previous paragraph), while in the Netherlands also waste generated abroad is treated (it is not included in the figures of the previous paragraph). This section provides information on the import and export of waste on the basis of a notification under the European Waste Shipment Regulation.

Figure 4 shows the totals for import and export for 2004 to 2022. Figure 5 and Figure 6 show the nature of the waste that was imported and exported in 2022. Figure 7 and Figure 8 show the origin and destination of imported and exported waste in 2022. All these figures include all the notified waste.

Figure 4; Import and export of waste into/out of the Netherlands from 2004 to 2022

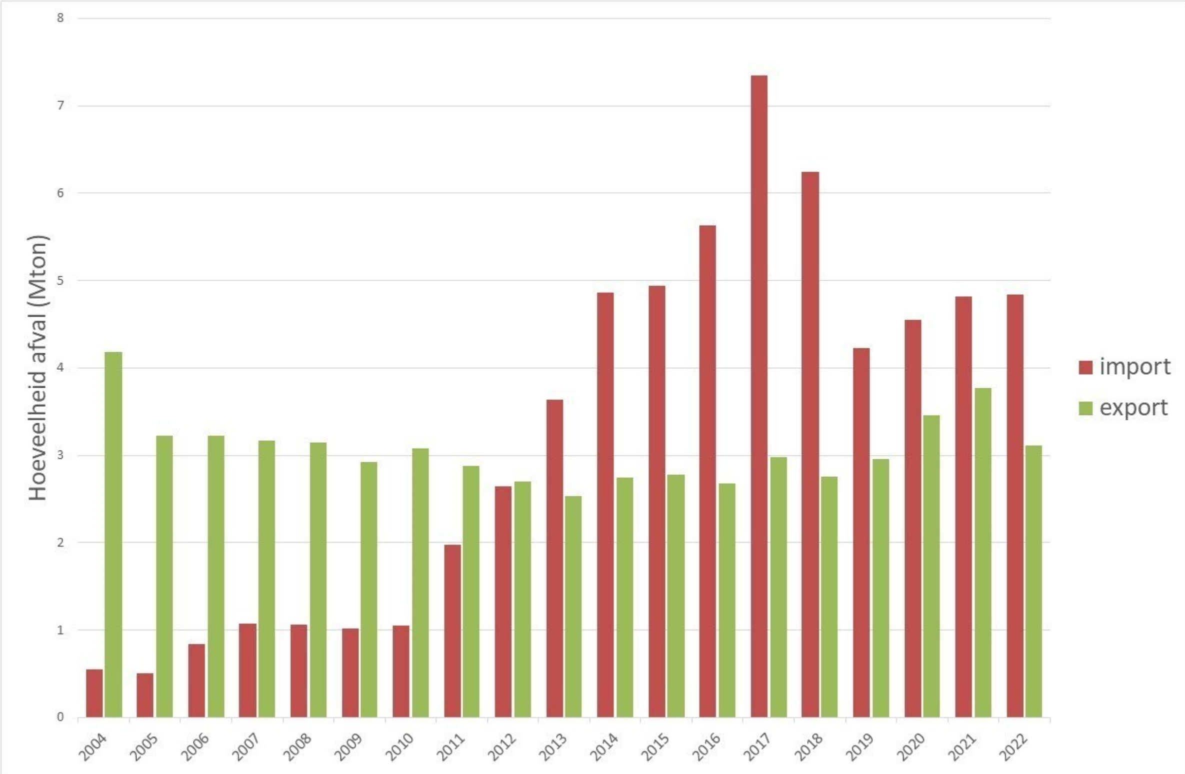


Figure 5; Nature of imported waste in 2022

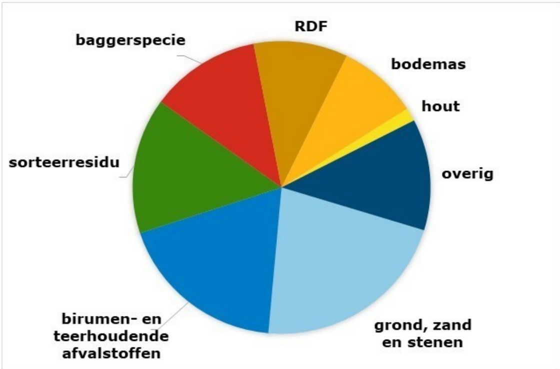


Figure 6; Nature of exported waste in 2022

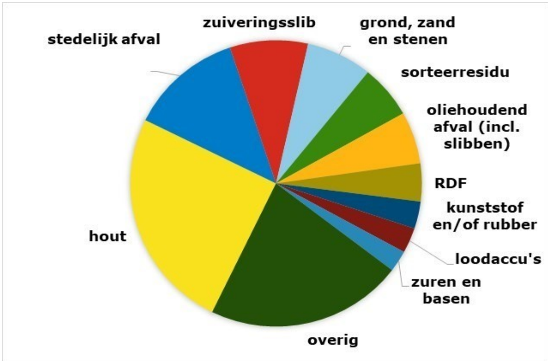


Figure 7; Origin of imported waste in 2022

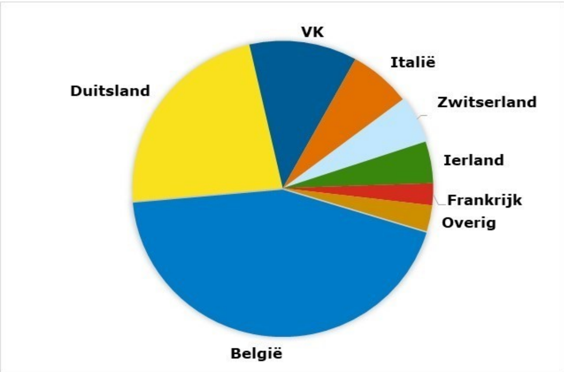
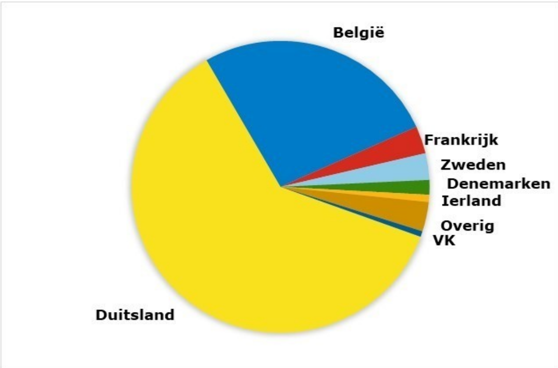


Figure 8; Destination of exported waste in 2022



3.3.4Waste management forecast up to 2037

The amount of waste expected to be generated in the period up to 2031 (with an outlook towards 2037) is estimated on the basis of the quantities and composition of waste in the years preceding that period and the expectations about future economic and societal developments (population growth, economic growth, consumption patterns, etc.).

For the CMP, the estimate of waste production until 2031 (with an outlook towards 2037) was based on reference scenarios from the 'Netherlands in 2030-2050: two reference scenarios – Prosperity and Living Environment Future Outlook' study by the Central Planning Bureau and the Environmental Assessment Centre. This study elaborated two future scenarios, High and Low. Both scenarios provide a picture of future developments for different sectors. These scenarios have been translated into an expected waste supply by target group.

The difference between the two scenarios is economic growth and population growth. The High scenario combines high economic growth of 2% per year with relatively high population growth. The Low scenario assumes moderate economic growth of 1% per year, together with limited demographic growth. Both reference scenarios are completed in a policy-neutral manner, i.e. no additional policies have been included (see [Section 3.2.2 'Principles for monitoring waste management']).

In both scenarios, the same translation from economic growth to waste supply growth has been used. In this translation, the current decoupling between GDP growth and waste supply growth was maintained for most sectors, and is estimated at 0.5. Or if a sector grows by 1%, waste supply will increase by 0.5%. For some target groups, the same absolute decoupling has been adopted as is already visible in the target groups concerned. Table 3 shows the waste generation for 2031 and 2037 based on both scenarios.

Table 3; Waste generation in 2022 and forecast waste generation in 2031 and 2037 under High and Low scenario

	Amount of waste generated (Mton)		
High scenario	57.6	60.7	62.4
Low scenario	57.6	57.9	57.8

Both scenarios outlined are equally likely. Therefore, it is not possible to choose one of these two scenarios in advance as the most likely. The total Dutch waste generation is therefore expected to be between 58 and 61 Mton in 2031 and between 58 and 62 Mton in 2037.

The developments in the generation of waste by target group and its management in 2031 (6 years after entry into force) and 2037 (an outlook for another 6 years) for High (Table 4) and Low (Table 5) respectively are presented below.

For discharges and discharges, it has been assumed that the processing proportion for all target groups remains the same as in 2022. These techniques are already waste that cannot be treated differently. For incineration as a form of disposal, the share remains the same for most target groups, which is often a stream that cannot easily be put to higher quality use.

In particular, landfilling will be restricted to non-combustible waste, as is the case today. Taking into account the non-included waste which is deposited at normal landfill sites, it is estimated that around 1 Mton landfill of contaminated soil, dredging spoil and residual streams is still to be expected as WIP residual substances, in addition to what is indicated in Table 4 and Table 5 (for this, see [Chapter on Landfill permits and exemptions] of the CMP).

Table 4; Waste management in 2022, 2031 and 2037 for High scenario

	Waste from the target group	**Total prod (Mton)**	**Recycling (Mton)**	**Useful application. others (Mton)**	**Incineration (Mton)**	**Landfill (Mton)**	**Discharge (Mton)**
2022	Consumers	8.0	4.3	3.6	0.0	0.1	0.1
	Traffic and Transport	0.9	0.4	0.2	0.1	0.0	0.2
	Agriculture	2.6	2.4	0.2	0.0	0.0	0.0
	Industry	14.1	11.4	1.7	0.4	0.2	0.3
	HDO	5.6	3.1	2.1	0.0	0.2	0.2
	Construction	23.5	21.9	1.2	0.0	0.3	0.0
	Energy supply	0.8	0.6	0.0	0.0	0.1	0.0
	STPs	1.3	0.1	0.0	1.2	0.0	0.0
	Drinking Water Supply	0.3	0.3	0.0	0.0	0.0	0.0
	Waste management	0.4	0.1	0.1	0.0	0.0	0.2
	Total	**57.6**	**44.6**	**9.1**	**1.9**	**1.0**	**1.1**

2031	Consumers	8.8	4.6	3.9	0.02	0.1	0.1
	Traffic and Transport	1.0	0.5	0.2	0.1	0.0	0.2
	Agriculture	2.6	2.4	0.2	0.0	0.0	0.0
	Industry	15.2	12.3	1.8	0.5	0.2	0.3
	HDO	5.4	3.0	2.0	0.0	0.2	0.2
	Construction	24.8	23.1	1.3	0.0	0.3	0.1
	Energy supply	0.8	0.7	0.0	0.0	0.1	0.0
	STPs	1.5	0.1	0.0	1.4	0.0	0.0
	Drinking Water Supply	0.3	0.3	0.0	0.0	0.0	0.0
	Waste management	0.5	0.1	0.1	0.0	0.0	0.2
	Total	**60.7**	**47.0**	**9.5**	**2.1**	**1.0**	**1.1**
2037	Consumers	9.2	4.9	4.1	0.0	0.1	0.1
	Traffic and Transport	1.1	0.5	0.2	0.1	0.0	0.2
	Agriculture	2.5	2.4	0.2	0.0	0.0	0.0
	Industry	15.8	12.9	1.9	0.5	0.2	0.3
	HDO	5.2	2.9	1.9	0.0	0.2	0.2
	Construction	25.4	23.7	1.3	0.0	0.3	0.1
	Energy supply	0.8	0.6	0.0	0.0	0.1	0.0
	STPs	1.6	0.1	0.0	1.4	0.0	0.0
	Drinking Water Supply	0.3	0.3	0.0	0.0	0.0	0.0
	Waste management	0.5	0.1	0.1	0.0	0.0	0.3
	Total	**62.4**	**48.3**	**9.7**	**2.2**	**1.0**	**1.2**

Table 5; Waste management in 2022, 2031 and 2037 for Low scenario

	Waste from the target group	**Total production (Mton)**	**Recycling (Mton)**	**Useful application others (Mton)**	**Incineration (Mton)**	**Landfill (Mton)**	**Discharge (Mton)**
2022	Consumers	8.0	4.3	3.6	0.0	0.1	0.1
	Traffic and Transport	0.9	0.4	0.2	0.1	0.0	0.2
	Agriculture	2.6	2.4	0.2	0.0	0.0	0.0
	Industry	14.1	11.4	1.7	0.4	0.2	0.3
	HDO	5.6	3.1	2.1	0.0	0.2	0.2
	Construction	23.5	21.9	1.2	0.0	0.3	0.0
	Energy supply	0.8	0.6	0.0	0.0	0.1	0.0
	STPs	1.3	0.1	0.0	1.2	0.0	0.0
	Drinking Water Supply	0.3	0.3	0.0	0.0	0.0	0.0
	Waste management	0.4	0.1	0.1	0.0	0.0	0.2
	Total	**57.6**	**44.6**	**9.1**	**1.9**	**1.0**	**1.1**

2031	Consumers	8.2	4.3	3.7	0.02	0.1	0.1
	Traffic and Transport	0.8	0.3	0.2	0.1	0.0	0.2
	Agriculture	2.6	2.4	0.2	0.0	0.0	0.0
	Industry	14.5	11.8	1.7	0.4	0.2	0.3
	HDO	5.4	3.0	2.0	0.0	0.2	0.2
	Construction	23.5	21.9	1.2	0.0	0.3	0.0
	Energy supply	0.8	0.6	0.0	0.0	0.1	0.0
	STPs	1.4	0.1	0.0	1.3	0.0	0.0
	Drinking Water Supply	0.3	0.3	0.0	0.0	0.0	0.0
	Waste management	0.4	0.1	0.1	0.0	0.0	0.2
	Total	**57.9**	**44.8**	**9.1**	**1.9**	**1.0**	**1.1**
2037	Consumers	8.2	4.4	3.7	0.0	0.1	0.1
	Traffic and Transport	0.8	0.3	0.2	0.1	0.0	0.2
	Agriculture	2.6	2.4	0.2	0.0	0.0	0.0
	Industry	14.7	12.0	1.8	0.5	0.2	0.3
	HDO	5.3	2.9	2.0	0.0	0.2	0.2
	Construction	23.3	21.7	1.2	0.0	0.3	0.0
	Energy supply	0.8	0.6	0.0	0.0	0.1	0.0
	STPs	1.4	0.1	0.0	1.3	0.0	0.0
	Drinking Water Supply	0.3	0.3	0.0	0.0	0.0	0.0
	Waste management	0.4	0.1	0.1	0.0	0.0	0.2
	Total	**57.8**	**44.7**	**9.1**	**1.9**	**1.0**	**1.1**

4. CMP assessment frameworks

This annex does not contain a binding assessment framework for the competent authority. There are also no assessment frameworks for the establishment of decentralised regulations.

5. Future plans

Policies and knowledge on the circular economy are under development. New policy intentions, changes to existing policies or changes to laws and regulations can all lead to CMP adaptations. The CMP is therefore subject to regular updates.

At present, no developments are foreseen that could lead to changes to this annex to the CMP.

More information on the development of the CMP and how stakeholders are involved can be found in [Chapter on CMP].

6. Resources and indication of source

Many monitoring reports are available on the circular waste website.

Ministerie van Infrastructuur en Waterstaat

Guidance on dumping ban exemption

Circular Materials Plan Review Framework

Circulair Materialenplan

Circular Materials Plan Design

Guidance on dumping ban exemption

Participation

This document is part of the draft Circular Materials Plan (draft CMP) for the public participation procedure. Everyone is given the opportunity to submit any areas for improvement or suggestions during this period before the CMP is finally adopted.

The Environmental Management Act stipulates that a public consultation procedure must be followed for the adoption of the CMP. This does not apply to all components for the CMP, but to those elements that have an impact on the competent authority decisions. In the CMP, these texts are placed under the heading ‘Assessment frameworks’.

Views on the review frameworks will be formalised in a response note. It will state how the views have been incorporated into the final CMP, or provide arguments as to why views have not led to an adjustment. While views on the explanatory parts are considered for potential improvements to the CMP, no formal reaction is provided for in the Response Note.

To submit your views, please use the form available on Platform Participation (see link on circulaire materials plan.nl). In your reaction, indicate the title of the section of the CMP to which you are responding, plus the page number or paragraph number.

PDFs draft CMP become website

The final text of the CMP will be a website. This guide will then be available as a PDF on the website. Some tips for reading the PDFs:

- In this PDF you can print out a ‘content’ or ‘bookmarks’ in the browser or the PDF reader’s left or right.
- The words that appear in the text are concepts. In the draft CMP, see the glossary under the section ‘Tools’.
- The [Internal links] in the CMP are still shown in blue with square brackets in the draft CMP, but these references are not yet working. The links are made available on the website of the final CMP.

This document is designed for digital users. Can’t read the text or images? Contact 088-7977102 or the helpdesk’s contact form.

Status: Circular Materials Plan draft for public consultation

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Website: circulaire materials plan.nl

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1. About this guide

In a circular economy, waste is managed in the highest quality possible way. Therefore, a number of waste substances are subject to a legal dumping ban (see [Chapter 2 'Legal framework'] of this guidance document). However, the law provides for the possibility to grant exemptions for some of these prohibitions in specific cases. This guidance document outlines how the competent authority should deal with the instrument dealing with the landfill ban exemptions.

This guidance is part of the Circular Materials Plan (CMP) and falls within the scope of Article 10.14 Environmental Management Act. This guidance should also be read in conjunction with the [Drafting and implementation chapter on dumping bans] of the CMP.

1.1 Target audience for the guide

Environmental services use this guidance as a framework when granting exemptions from the dumping ban. **Landfill operators** where the waste in question is to be landfilledapply for an exemption from the landfill ban. This guide is therefore also relevant for them.

1.2 The importance of this circular economy guidance

A circular economy aims to achieve high-quality waste treatment. The preservation of materials in the loop, by keeping them in circulation for as long as possible and as much as possible, is of great importance in this regard. Therefore, a number of waste substances are subject to a legal dumping ban. However, there are conceivable situations where dumping of such waste is necessary. In this case, an exemption from the dumping ban is the way of dealing with the waste in a controlled way and with an agreed time and scope.

This guide is an instruction for handling requests for exemption from the dumping ban. This ensures that waste is only dumped with a derogation if, after thorough investigation, it appears that it cannot be processed in a higher quality manner, and in a larger quantity than necessary. In this way, it contributes to achieving a circular economy. It also contributes to an equal assessment of requests for exemption from the landfill ban by the various competent authorities.

1.3 CMP review frameworks

As mentioned in the introduction, this guidance falls within the scope of Article 10.14 Environmental Management Act. This means that competent authorities should take this guidance into account when making decisions on waste, such as deciding on a request for a dumping exemption. This entire guidance document provides an assessment framework, with the exception of the annexes to this guidance document. These are primarily of an explanatory and supportive nature.

If a competent authority wishes to take a decision that is not in line with the assessment frameworks set out in this guidance, it must follow the derogation procedure (see [Chapter derogation]).

A competent authority may, after reviewing a request for a landfill ban exemption in accordance with this guidance document, come to the conclusion that an exemption may be granted in a specific case. This is almost always a substantive deviation from the minimum standard for that waste and therefore a deviation from the CMP. See also [Chapter 3 'General aspects when dealing with a request for a landfill waiver'] of this guidance document.

2. Legal framework

2.1 Landfills and Waste Dumping Prohibitions Decree (Besluit stortplaatsen en stortverboden afvalstoffen)

Article 1 of the Landfills and Waste Dumping Prohibitions Decree(Bssa) lists 45 categories of waste for which dumping is prohibited. However, for 31 of these waste categories, it is possible to apply for an exemption from the prohibition. Article 4 of the BSSA states that the Provincial Executive may attach to the permit of a landfill site the requirement that the dumping ban does not apply to designated categories of waste (except categories 1 to 14) if such waste is designated pursuant to article 5 or article 6 of the BSSA.

- Article 5 BSSA:

‘By regulation of Our Minister, categories of waste mentioned in Article 1(1), categories 15 et seq. or parts of those categories may be designated, for which in his opinion no other manner of waste management than dumping is possible in the Netherlands.’

- Article 6(1) BSSA:

  ‘At the request of the operator of a landfill site, the Provincial Executive may state that in their view no other manner of waste management than dumping is possible in the Netherlands for the waste referred to in Article 1(1), category 15 and following, or for part of such a category.’

There are therefore two possible ways of deviating from the dumping ban: a decision Ministerial Regulationand on the basis of a waiver from the Provincial Executive competent for the landfill in question. The scheme is intended to cover situations where a return to a landfill is required on a long-term and rather generic basis. The granting of exemptions by the Provincial Executive is intended to cover more specific, individual and temporary cases. This guide is about the second approach.

Article 6 gives the Provincial Executive the power to grant exemptions from the dumping ban. It is therefore important that the Provincial Executive ultimately determines whether or not, in their view, there is no alternative to landfill.

The dumping ban exemption is valid as long as the circumstances leading to the decision of the Provincial Executive are still present. These circumstances will then be subject to a transitional period of 10 working days. This will be a condition of the decision of the Provincial Executive, which will automatically suspend the exemption in the event of changed circumstances (Article 6(2) of the BSSA).

Because of the protection of the environment and human health, exemptions from the landfill ban are excluded from the so-called Lex Silencio Positivo (Article 6(3) of the BSSA). This means that the absence of a reply from the Provincial Executive within the usual decision period does not lead to the automatic granting of the exemption by operation of law.

2.2 2013 Landfill Ban Certificate Regulation

Article 7 of the BSSA states that rules shall be laid down by Ministerial Regulation on the data provided to the Provincial Executive in the event of a request for a certificate as referred to in Article 6 of the BSSA. This scheme is the 2013 Dumping Ban Declaration Regulationwhich determines what an application for a landfill ban exemption must fulfil.

Article 1 of the Ministerial Order reads as follows:

‘The operator of the landfill shall provide the following information to the Provincial Executive on a request as referred to in Article 6(1) of the Landfills and Waste Dumping Prohibitions Decree (the ‘Besluit stortplaatsen en stortverboden afvalstoffen’):

a. The category of waste or part of this category and the corresponding EURAL codes for which no other waste management mode than dumping is possible
b. A description of the nature and composition of the waste
c. Information on the origin of the waste and the process by which it was generated
d. The amount of waste to be landfilled
e. The waste disposer
f. The period for which the declaration is requested
g. The reason why the waste cannot be managed other than by landfilling;
h. An overview of the initiatives taken to manage the waste in question by other means
i. Documents from companies that can be assumed to be able to process the waste in question, stating that they cannot accept the waste in question during the period for which the certificate is requested and the reason for this refusal. If there is more than one supplier of a single processing technique, it is sufficient to provide documentary evidence that at least two of these suppliers, not belonging to the same company, are unable to process the waste’.

[Section 5.2 ‘Points a to i for a waiver request are sufficiently addressed?’] of this guide provides further explanation and discussion of the points above.

3. General aspects when dealing with a request for discharge of the dumping ban

Circular Materials Plan as a framework

As mentioned in Chapter 1 of this guidance document, environmental services are required to assess compliance with the CMP when granting exemptions from the dumping ban.

Landfilling with an exemption

In base line, the system of derogations is intended to allow exceptions to the regular, higher-quality processing.

- This requires a thorough assessment of the reason why the waste cannot be treated in a higher quality than landfill by the assessor requesting a derogation. The application must therefore provide sufficient information about the origin, nature and composition of the waste. A request for exemption must always clearly describe the circumstances that make it necessary to landfill. This is discussed in more detail in the next chapter. In the absence of such information, and if it is not completed in time and sufficiently, the competent authority will disregard the application for exemption.
- As an exception, an exception should continue to limit the deadline for the exemption to a period where it is likely that there will be no alternative to landfill. They are also actively monitoring the circumstances on which the exemption is based and have not changed. If this is the case, the holder of the derogation will be actively informed that the waiver has by law become invalid.
- For some wastes, requests for exemption from the dumping ban are regularly returned. In order to improve waste management, it is relevant to consider the reasons for granting the exemptions in the past and whether they are still valid. For recurring requests for exemption, the Environmental Service insists that the disposer should examine how the generation of the returned waste can be prevented in the future.

  If it is foreseen for a particular waste that no other form of waste management will be possible in the Netherlands for a longer period than dumping, it may be appropriate to issue a general exemption, on the basis of Article 5 of the BSSA. If a waste is considered eligible, the environment section can indicate this to Rijkswaterstaat WVL via the waste management helpdeskThe authority to issue a national exemption is vested in the government.
- Environmental services investigate exemption requests for landfilling waste resulting from waste treatment or the authorised method of waste treatment is in line with the CMP. If necessary, action is taken to align permits with the applicable minimum standard[1]. Environmental services share information with each other when the producer of the waste is located in a region other than the landfill.

Deviation from minimum standard

The CMP contains ‘waste and chain plans’, in which the policy for different waste types is developed. For each waste type, a minimum standard has been introduced to describe the various processing methods that are of sufficient quality to be licensed. Only a few plans include the disposal of waste, subject to certain conditions, in the minimum standard.

When drafting the minimum standards, the choice was made on a deliberate basis to not all mention exceptions that may nevertheless be paid in with a waiver. This will ensure that the minimum standard is as uniform as possible. This means that, in practice, granting an exemption from the dumping ban almost always means deviating from the minimum standard. For this, the competent authority must apply the derogation procedure (see [Chapter 4]).

1 Under Article 8.98 of the Decree on Quality of Environment (Bkl), the competent authority must have updated the permits where necessary within one year of the entry into force of the CMP if the permit no longer meets the minimum standard or the categories of waste described in the CMP.

Derogations]). However, if the assessment frameworks of this guidance and the [Preparing and implementing landfill bans] section of the CMP are still met, this can be done with minimal additional administrative burden. See above [Section 3.4.1 ‘Deviations from the CMP’] of the above-mentioned chapter ‘Preparation and implementation of dumping bans’ of the CMP.

4. The steps when assessing a request for a landfill ban exemption

This chapter outlines the main points and key questions to be addressed by an environmental section when assessing an application for a dumping ban exemption. This is presented both as a checklist and as a decision tree (Figure 1). The section of this guide further specifies the steps to be taken.

Step 1: Requirements for an admissible application

1. One waste or category per waiver 5.1
2. Are points (a) to (i) requesting an exemption sufficiently addressed? 5.2
   - ➢ Two declarations per processing method

Step 2: Requirements for declarations by processors

1. Official character, independent and substantiated? 6.1

Step 3: Assessment

1. Is lack of capacity an obstacle to processing? 7.1

➢ How long does this situation last? Is storage possible?

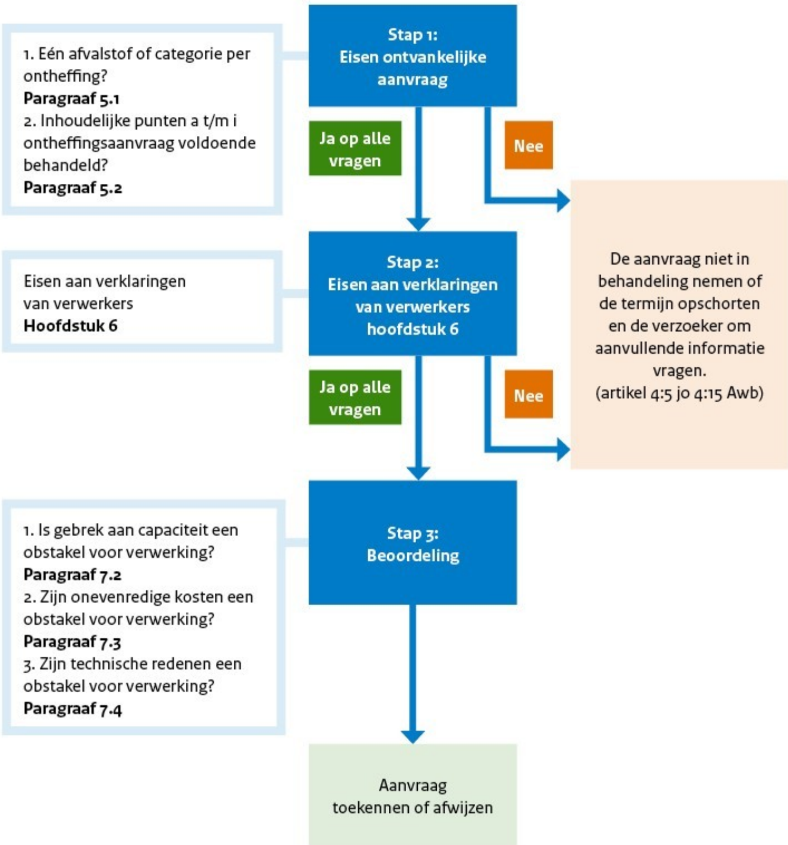
2. Are disproportionate costs an obstacle to processing? 7.2

➢ Are costs specified in the minimum standard?

3. Are technical reasons an obstacle to processing? 7.3

➢ Are mitigating actions possible?

Figure 1: Decision tree on the processing of an application for a dumping ban exemption



5. Step 1: Requirements for an admissible application

5.1 One waste or category per exemption

Practice has shown that it is more difficult to take a decision when the applicant includes several wastes in a single application. The standard is therefore that a waiver request is made for only one waste category or part of this category from the BSSA and the corresponding EURAL code(s). This ensures that the situation remains easy for the environmental assessor, which benefits from an early follow-up. If the applicant wishes to make several applications at the same time, it is important that separate structured documentation is available for each exemption application.

- If several wastes are requested under one exemption, the environmental service asks the applicant to apply for a separate exemption for each waste or category of waste or to provide separate documentation for each waste.

5.2 Points a to i for an exemption request dealt with sufficiently?

[Section 2.2 ‘Landfill Ban Declaration Regulation 2013’] of this guidance sets out requirements to be met by an application for a dumping ban exemption. When assessing an application against these legal requirements:

a. The category of waste or part of this category and the corresponding EURAL codes for which no other waste management mode than dumping is possible

The law refers to one category in singular. [Section 5.1 ‘One waste or category per exemption’] of this guidance already states that the intention is also to include only one category of the BSSA for each exemption.

An exception is cases where one waste substance may fall under more than one category of the BSSA. For example, technically non-combustible, non-recyclable waste may originate from both business waste (category 15) or construction and demolition waste (category 29).

b. A description of the nature and composition of the waste

The information to be provided consists of at least the state of aggregation (substance), appearance (e.g. powder, granulate) and composition. In particular, if the shape, size or presence of certain materials in the waste plays a role in supporting the exemption request, photos need to be attached. In other cases, photo material may also help the waiver assessor to get a good picture of the waste at stake.

c. Information on the origin of the waste and the process by which it was generated

This includes e.g. the place where the waste was released and the reason for the release. In many cases, the place of release of the waste will be the company or site where the waste has been treated or released through a production process. For example, in the case of construction and demolition waste, the site of the demolition project must be included in the application.

d. The amount of waste to be landfilled

An exemption is granted only to the extent and for the duration strictly necessary. Therefore, the applicant for a waiver should not only indicate the quantity of waste for which the waiver is being requested. It must also justify why this amount is and relate it to the reason why it is to be landfilled (point (g)) and the expectation of how long the problem of treating the waste differently than landfilling is to last. The extent of the request must also be proportionate to the amount of waste normally received by the applicant during the period for which the waiver is requested (point (f)). The purpose is not to grant a waiver for the security but for a large quantity and a long period of time.

e. The waste disposer

The producer of the waste is not always the person who delivers the waste to the landfill for disposal. It is therefore necessary to specify who the disposer of the waste is.

f. The period for which the declaration is requested

See point (d); an exemption is granted only to the extent and for the duration strictly necessary. The period for which a waiver is requested must also be justified in relation to the reason why this waste should be landfilled (point (g)) and the expectation of how long the problem of treating the waste differently from landfill is expected.

g. The reason why the waste cannot be managed other than by landfilling.

There can be ‘no alternative method of waste management to landfilling’ when

1. too little processing capacity is available due to plant failure or excess waste.
2. because of an unusual incident or calamity, the composition of the waste has changed in such a way that it can no longer be processed in the intended manner.
3. There areproportionate costs for the processing.

h. An overview of the initiatives taken to manage the waste in question by other means. See section i.

i. Documents from companies that can be assumed to be able to process the waste in question, stating that they cannot accept the waste in question during the period for which the certificate is requested and the reason for this refusal. If there is more than one provider of a single processing technique, it is sufficient to provide documentary evidence that at least two of these providers, not belonging to the same company, are unable to process the waste.

For h and i, it is important that all forms of processing that are of a higher grade than landfill are involved in the search for alternatives. In this context, the minimum standard for the waste concerned is important. For example, if the latter specifies that recycling is the minimum for a waste, it must be clear from both recycling and incineration that this is not an alternative, and statements from both two recycling companies and two waste incineration plants must be submitted. If there is more than one common recycling technique, then <u>at least</u> two explanations must be provided for each one (see also the explanatory information framework below).

The full load list[2] must be respected by the applicant and the case officer of the request for exemption. The applicant is requested to contact processors with sufficient capacity (significant shortages). Here, the request for exemption handler has the option of requesting more than two declarations per processing method. The number of two declarations per processing method is a minimum.

Explanation of the requirement of two declarations per processing method

As described in point ‘i’, at least two declarations per step of the waste hierarchy or processing method should be provided. This is not explicitly mentioned in point i of the 2013 Waste (Landfill Ban Declaration) Regulation.

- However, it follows from Article 6 of the BSSA. This states that the competent authorities may grant an exemption if they consider that <u>no other way</u> of waste management is possible. This means that <u>all</u> alternative processing methods should be considered.
- In addition, Article 1(i) of the scheme explicitly links the limitation to two declarations in case there are

more processors with the same processing technique. If more than one
Therefore, on this basis, a total of two declarations cannot suffice.

2 The full load list is a list managed and produced by RWS WVL and is updated every four months. Acceptance conditions and remaining tonnes of processing capacity in the coming period are listed for several waste processing plants. Participating companies voluntarily registered with Rijkswaterstaat.

• Furthermore, the explanatory memorandum to the 2013 Dumping Ban Declaration Regulation (see the explanatory framework in chapter 6 of this guidance document) explicitly states that the applicant should provide documentary evidence that all techniques have been examined.

In practice, the starting point is that two statements per processing method are fairly widely accepted. With this included in the CMP assessment framework, this will now become a binding starting point for all cases.

The substantive assessment of the declarations is dealt with in chapter 6 of this guide.

- ⇨ If not all points (a) to (i) are mentioned and sufficiently substantiated or clear, processing of the application will be suspended and additional information will be requested from the applicant (Article 4:5 in conjunction with 4:15 Awb).
- ⇨ If the missing information is not provided on time or in full, the waiver request will not be processed.

6. Step 2: Requirements for declarations by processors

This section describes the requirements for the declarations that form part of the application for a derogation. The following general criteria apply to the declarations:

1. The declarations have a formal status, issued by a staff member responsible for the procurement and monitoring of the conditions of acceptance. Informal e-mails without a signature will not be accepted. In case of doubt, the case handler will contact the applicant in relation to the request for exemption.
2. Due to the scale-up of the waste sector, many businesses have been integrated into larger business groups. Where the applicant and landfill operator belong to a company group that also has interests in one or more other waste processing plants (e.g. WIPs), it is not permitted to submit declarations from companies within the company group as supporting documents. In addition to the fact that the group cannot be its own, it is also necessary to submit declarations from two processors that are not part of the same group.
   It is up to the case handler to decide that a derogation can be made from this criterion for specific cases. This includes situations where the number of processors is very limited and where the requirement of two statements from different companies/groups is both not real from outside the group.
3. For the requirements of the declarations, the explanation of the 2013 Dumping Ban Declaration Regulationis relevant (see box below). Based also on this explanation, the applicant must clearly present the reasons why the waste cannot be processed differently than dumping during the period for which the exemption is requested. In the absence of any argumentation, the applicant is given the opportunity to complete the request (for the substantive assessment of the argumentation, see [Chapter 7 'Step 3: Assessment'] of this guide).

⇨ When
- there are not enough explanations,
- the status of the declarations is not clear;
- This does not include statements from two companies belonging to different groups, other than the applicant's own company group, or - no reasoning as to why the waste should be landfilled,

it pauses the application and requests additional information from the applicant (Article 4:5 in conjunction with Article 4:15 of the General Administrative Law Act).

⇨ Once the request has been completed, a negative decision is taken
- in the case of insufficient declarations of correct status (criterion 1)
- if criterion 2 is not met without good reason.
- if there are not enough declarations with a justification that there is no alternative to landfill (criterion 3).

Quotation from the explanatory note of the 2013 Landfill Ban Statement Regulation

It should be possible for the Provincial Executive to decide, on the basis of an application, whether a waste substance may be dumped in derogation from the dumping ban. This means that the application must contain sufficient information to show that there is no alternative way of waste management.

For this purpose, the applicant submits **documentary evidence**, showing that companies where the waste could normally be processed do not accept the waste for processing. The documents must also show **the reason** for the refusal.

If different processing techniques are normally possible for the waste, the applicant should provide **documentary evidence** that **all techniques** have been examined. If there are several providers of one particular processing technique, as is the case, for example, in the case of incineration of waste in power plants, it is sufficient to provide documentary evidence that at least two of these providers, not belonging to the same company, cannot process the waste.

There are several reasons why a certain waste cannot be processed. For example, if the composition of the waste is the reason, the requester must pay **particular attention in the request to the composition of the waste concerned in relation to the acceptance criteria** of potential processors. When the size of the waste material in question is

stumbling block, the applicant should indicate in the application **why the size cannot be changed** to allow the waste to be processed.

If lack of capacity on the part of processors is the reason why a certain waste should be dumped, the applicant should justify **why the waste cannot be stored temporarily** until processing capacity is released.

The costs of processing may also be used as a reason to apply for the issuance of a certificate. An indication of what should be considered disproportionate is described in the National Waste Management Plan (LAP) (*red: read CMP*). These are the costs of alternative processing compared with the costs of landfilling.

7. Step 3: Assessment

This section identifies a number of questions on how to proceed with the substantive assessment of the situation leading to a landfill need. In addition to a general starting point, three situations are distinguished: lack of capacity, disproportionate costs and technical reasons.

7.1 General

The granting of exemptions from the landfill ban is an exception to the general rule. The intention is to allow the dumping of waste that is actually subject to a dumping ban only when there is no reasonable alternative and only for as long as and for as much time as is really necessary. The burden of proof that a transfer should actually be made lies on the person requesting the waiver. The latter will need to demonstrate that they have explored all possible alternatives and provide evidence that they are not possible in their case. This places a high level of requirements on the basis of which the request for exemption is substantiated. The waiver request handler then critically examines whether the request is sufficiently substantiated to show that there is no alternative to dumping.

7.2 Step 3.1: is the lack of capacity an obstacle to processing?

The lack of capacity of processors may be the reason why waste substances that are normally subject to a dumping ban may still be dumped with an exemption. However, there are some conditions:

1. Where a **lack of capacity** on the part of a processor is the reason why a certain waste should be dumped, the applicant should justify **why it is not possible to store the waste temporarily** until processing capacity is available again.
2. Where sufficient explanations of all possible alternative forms of processing indicate that for a given period of time there is a temporary lack of processing capacity and storage is not an option, a waiver is granted **with** an **period of validity equal to or less than the period during which no processing capacity is available**. The starting point is, therefore, that the exemption is granted for the shortest possible period of time and for the lowest possible amount of waste. If there is no prospect of a possible release in a reasonable time, the handler can make an assessment of the request for exemption for a reasonable period of time (up to a maximum of 12 months).

 If a lack of capacity is claimed as a reason for landfilling and the requirements of steps 1 and 2 are met, a derogation can be issued for the waste concerned. In the absence of capacity, the quantity of waste that is as limited as possible and the duration of the derogation is as short as possible (up to a maximum of 12 months).

7.3 Step 3.2: are disproportionate costs an obstacle to processing?

Disproportionate costs may be a reason for charging the waste to landfill. Both the explanatory notes to Article 6 of the Landfills and Waste Dumping Prohibitions Decreeand the explanatory notes to the Dumping Ban Declaration Regulation 2013, to Article 1(h) and (i) state:

> ‘An indication of what should be regarded as disproportionate will be described in the National Waste Management Plan (LAP) (ed: Read CMP). These are the costs of alternative processing compared to landfill costs.’

As the CMP is the legal successor to the LAP, the CMP implements the EUR 265 — which implements this cost criterion from this regulation.

The following conditions apply to the granting of an exemption from the landfill ban on the basis of costs:

1.exemptions from the landfill ban on disproportionate costs should be granted only for:

ogypsum and stone wool.

othe occasional cases where waste [1] is subject to a dumping ban, but the CMP does not have a minimum standard [2] and both recycling and incineration are not economically an option [3].

For an explanation, please see the framework in [Preparing and implementing landfill bans] of the CMP.

2. Statements from at least two authorised processors (per processing method) are required showing that the processing of the specific waste costs more than EUR 265 per tonne (excluding transport costs and

VAT). The Authority may ask the applicant to provide an additional declaration from a designated processor.

For an explanation of the use of the financial criterion from the CMP (the EUR 265), see the CMP's [section guse of the cost criterion].

A request for exemption from the landfill ban, to the extent that it is based on disproportionate costs, will be refused if it does not meet the criteria set out in this section.

7.4 Step 3.3: are technical reasons an obstacle to processing?

7.4.1 Does the waste have properties that make processing difficult?

The nature or composition of a material or waste may be a reason why processing according to the minimum standard is not technically possible. There are various properties that may lead to the refusal of a waste material at a sorting, recycling, incineration or cement kiln plant. When applying for a waiver based on material properties of the waste, the declarations must address the properties in relation to the acceptance conditions of the processors. The presence of the property must be justified (photographs, chemical analyses) and the reasons why this property is present in the waste in this particular case (specific origin, separate pollution by disaster, etc.).

For a comprehensive overview of potentially problematic properties for sorting, incineration in a WIP and incineration in a cement kiln, see tables 2.1, 2.3 and 2.4 of the report Technical assessment framework for assessing exemption from the dumping ban. For the sake of completeness, these tables are included in their entirety in Annex 1 to this guide.

For properties where these tables indicate that they cannot be a reason for refusing the waste in the particular way of processing (there is 'No' in the second column), this material characteristic will be rejected as supporting the request for a landfill exemption. In other cases, the request for derogation handler checks whether alternative processing is indeed not possible for the specific situation to which the request relates.

For forms of processing other than sorting, incineration in a WIP or use in a cement kiln, specific other material properties may be a problem. The handler of the request for exemption will then assess whether the waste in question indeed does not meet the processor's acceptance criteria and whether this waste is likely to have a specific composition that differs from the waste normally accepted by the processor.

If the waste does not have any properties that would render processing impossible, the request for exemption will be rejected, provided that it is based on the properties of the waste that would render the processing impossible. If characteristics make processing difficult, the reasons why mitigation measures do not improve this should be justified (see next section).

7.4.2 Are mitigating measures possible?

When a waste presents properties that make processing difficult or impossible, this does not mean directly that landfilling is the only option. Mitigating actions are sometimes possible. In other words, sometimes a processing step may allow for higher-quality processing than dumping. The applicant is therefore obliged to look for mitigating measures. The application must include a justification as to why these measures cannot be applied. In any case, costs are not a valid reason for disregarding an alternative for landfilling if it is less than EUR 265 per tonne (see also the explanatory note below the figure).

In assessing the possibility of mitigating actions, the case officer follows the step-by-step plan below.

Figure 2. Step-by-step plan to assess whether a waste can only be landfilled for material technical reasons

Explanatory Note

Steps 3.3a, 3.3c and 3.3e assess the suitability of the waste to be recycled, incinerated in an incineration plant or weathered, for example, in a cement kiln. This is done by looking at the undesirable material properties of the waste and assessing whether they can be a ground for refusal for sorting and/or recycling. This may include dust-like material, or the presence of harmful elements, interfering substances or organic matter. A comparison with the conditions of acceptance of potential processors can support the request for exemption.

Steps 3.3b, 3.3d and 3.3f assess the possibility of mitigating measures to make the waste suitable for recycling, incineration in an incineration plant or energy recovery in, for example, a cement kiln. This could include, for example, the possibility of wetting or pelleting dust-like material, or the use of post-separation to remove harmful elements and perturbants. Cutting, shredding or pelletisation may also be an option, as well as the mixing of substances from an incineration plant to enable incineration of material with a problematic combustion value.

To assess whether all relevant mitigation techniques have been considered and whether the costs have been estimated in real terms, the case handler can use Chapter 4 of the report Technical assessment framework for assessing a dumping ban exemption.

The comments are as follows:

1. Specific forms of recycling sometimes impose specific requirements on the waste to be processed. Therefore, there are cases where very different mitigation measures have to be considered in order to make the waste still suitable for that form of recycling. The mitigation measures included in the report are therefore not exhaustive.
2. The prices quoted in the report are price level 2019. However, this should be taken into account when assessing the request for a waiver.
3. Mitigating measures are only cost-effective if the ‘mitigating measure + processing’ costs (e.g. ‘reduction + incineration in an incineration plant’) for that specific waste exceed EUR 265. It goes without saying that the applicant for a waiver must prove this. Where processing abroad would be required (cement furnace), the identification of additional costs may take into account transport costs. This therefore differs from the general line in Chapter [Use of cost criterion] of the CMP.

   Please note:
   Landfill fall-back because, according to the minimum standard, processing is more expensive than EUR 265. This can only be the case for gypsum and stone wool, or in exceptional cases where the CMP does not have a minimum standard (see [Section 7.3 ‘Step 3.2: are disproportionate costs an obstacle to processing?’] of this guidance document). If processing according to the minimum standard is not possible for technical reasons, costs of alternative forms of processing may play a role in more situations).

 Where mitigating measures are possible, the statements should clearly state the reasons why they are not taken. If mitigating actions are possible and not addressed or not sufficiently addressed in the request for exemption, even after the possible addition (see chapter 6 of this guidance document), the request will be rejected.

The step-by-step plan in this section has been developed for a number of waste types. This has resulted in a number of fact sheets being annexed to this guide for information purposes as Annex 2.

Annex 1

This annex contains tables 2.1, 2.3 and 2.4 of the report Technical assessment framework for assessing a dumping ban exemption.

These tables provide material properties that may lead to a refusal of a waste at a sorting plant, an incineration plant or a cement kiln. The tables indicate whether the property is a ground for refusal and a brief explanation of the (possibly) undesirable property. For properties where these tables indicate that they cannot be a reason for refusing the waste in the particular way of processing (there is 'No' in the second column), this material characteristic will be rejected as supporting the request for a landfill exemption.

The material characteristics shown in the tables are qualitatively worded. Section 3 of the said report sets out the acceptable limits for the material properties that may have been ground for refusal by the relevant processor. This information may be used by the waiver request handler to check whether alternative processing is indeed not possible for the specific situation covered by the request.

Table 2.1 Material properties that may lead to refusals at a sorting company

Material property of a waste stream	Technical reason for refusal[106]	Material characteristic explanation
Too many large materials	No	(Some of the) sorting companies have equipment available that enables the reduction of large materials. In principle, the size of all waste can be processed if it is delivered with a dump truck, container, delivery van or *walking floor*.
Too many long materials	No	(Some of the) sorting companies have equipment in place that enables the reduction of long materials. In principle, all waste can be processed on the basis of its length if it is delivered with a dump truck, container, press truck or *walking floor*.
Materials Too Small	No	Sorting of waste streams with a small particle size is technically possible. However, the current financial and legal framework provides that the current infrastructure for sorting mixed waste streams cannot accept materials smaller than 10 centimetres. If the waste supplied consists of too much small particles, it will be refused.
Too much dust-like material	Yes	Substance has four effects that refuse waste streams with substance: 1. Dust is an occupational health and safety risk; 2. Dust can grab our way through to work; 3. Dust can cause dust explosions; Dust reduces the effectiveness of NIR separators[107].
Too low a combustion value	No	The effect of applying insufficient combustion value is not undesirable from a technical point of view but has an impact on the costs of marketing the sorting residue and therefore pricing.
Too high a combustion value	No	Too high a value for combustion does not have an undesirable effect from a technical point of view, but has an impact on the costs of marketing the sorting residue and therefore pricing.
Too low density	No	From a technical point of view, low density has no undesirable effect. However, the logistical impact of low density could be substantial, as the cost of logistics per tonne of waste could be very high at low densities of, for example, EPS or PUR.

106 This is generic. There will always be installations where a characteristic can still be a reason for refusal. For example, in the case of large materials, if the sorting plant does not have the right shredder.

107 An NIR separator is a separation technique that allows the type of material to be determined and also selectively separated based on the reflection of infrared light.

Too many harmful elements	Yes	Substances that put the disposal of the sorting residue at risk may be refused. An example is teflon, with a high concentration of fluorine.
Presence of perturbants	Yes	This is a broad category of substances that pose a risk to staff or the sorting facility for various reasons if these substances are part of a mixed waste stream to be sorted. Examples include asbestos, mattresses, animal carcasses, medical waste and hazardous waste.
Too much Very Concerning Substances (SVHC)	No (not yet)	SVHCs must not be present in critical concentrations in recycled materials. If SVHCs are present, they must be sufficiently removed in the recycling process before a material can be reused.
Too damp	No	For mixed waste streams, the presence of moisture is never a bottleneck. For some mono-streams, such as mattresses, too much moisture prevents recycling.
Too much organic matter	Yes	Mixed waste is more difficult to sort and/or recycle if organic matter is abundant.
Fire-hazardous substances	Yes (in mixed waste)	The undesirable effect is the risk of a fire. Examples are waste substances that are scalding, explosive or smouldering, flash point <100ºC, or contain lithium batteries.
Mono-stream without recycling route	Yes	If a recycling outlet is not available for a certain type of mono-stream, it may be refused by a sorting company if this mono-stream does not also have a disposal outlet for energy recovery.
Mono-flow of too small volume	No	If the volume offered is insufficient for a certain type of mono-stream, it may be refused by a sorting company if it also has no disposal facility for energy recovery.

Table 2.3 Material properties that may lead to refusals at a waste incineration plant using a grating furnace

Material property of a waste stream	Technical reason for refusal[108]	Material characteristic explanation
Too many large materials	Yes	Large materials can hide the filler funnel or cause disturbance elsewhere in the logistics process.
Too many long materials	Yes	Long materials can hide the filler funnel or keep hooks around the process. In addition, for very long materials, there is a risk that some will already burn on the grid while others may still hang in the bunker (fire risk).
Too bulky materials	Yes	Materials that are bulky, such as stumps, thick beams and film-burning rolls, are incompletely incinerated during the incineration process. In addition, very bulky materials can hide the funnel or keep hooks around the process.
Materials Too Small	Yes	Fine particles fall through the schedule and cause process defects. Fine particles can also be transported with the flue gases unburned and cause problems in flue gas cleaning. This is especially critical for materials where this is a mono-stream or where there is too much of a mixed flow.

108 This is generic. There will always be installations where a characteristic can still be a reason for refusal. For example, in the case of large materials, if the sorting plant does not have the right shredder.

Too much dust-like material	Yes	Dust has the following risks: 1. Dust is an occupational health and safety risk; 2. Dust can grab our way through to work; 3. Dust may pass through the slats; 4. Dust can fly the exhaust-gas cleaning unburned with the combustion gases; 5. Dust can cause dust explosions.
Too low density	Yes	Very low-density materials are mainly materials used for insulation. These materials pose a risk, as they may or may not be incinerated with the combustion gases contained in the flue gas cleaning operations. This causes problems, for example, with the E-filter. Furthermore, these materials have a negative impact on the quality of the axles. Finally, they often contain flame retardants.
Presence of pastelike substances	Yes	Pastes can fall through the grating.
Too low a combustion value	Yes	Too low a combustion value is a problem because the grate waste needs to be completely incinerated to ensure the correct ash quality and composition of the flue gas.
Too high a combustion value	Yes	Too high an average combustion value reduces the physical throughput of an installation. If a high combustion value is mitigated by mixing the waste, the fact that the combustion process can fluctuate due to large differences is a risk to the emissions of the flue gases and the quality of the bottom ash. In addition, temporarily too high combustion values are associated with corrosion in the plant.
Too many harmful elements	Yes	Examples of harmful elements in materials are: 1. Organic chlorine is corrosive and has poor flue gas cleaning. 2. Chlorine in salts corrosion and is bad for the bottom ash. 3. Sulphur is bad for cleaning the flue gas in some incineration plants. 4. Organic fluorine (e.g. Teflon) corrodes and is poor for flue gas cleaning. 5. Heavy metals are bad for the quality of the bottom ash.

Presence of perturbants	Yes	This is a broad category of substances that pose a risk to staff or installation for various reasons. An example is poker springs for mattresses where, after burning, the springs cause tangles that cause problems in the slag processing plant or in the slats. If technically justified, a variety of substances can be classified as a perturbation agent. Another good example is asbestos, which poses a risk to both the health of workers and the quality of the axles.
Too much Very Concerning Substances (SVHC)	Yes	If SVHCs are not destroyed during incineration, they pose a risk to the soil quality that needs to be freely applicable. In addition, a risk to the flue gas emissions to comply with the permit may also occur.
Presence of poorly combustible materials	Yes	These materials will incompletely burn. This has a negative impact on the quality of the flue-gases and the quality of the bottom ash. Examples include: • paper rolls; • film reels; • yarn rolls; • carpet rolls; • textiles (with flame retardants); • materials with flame retardants.

Presence of materials melting during a slow combustion process	Yes	Materials such as roofing bitumen and rubber are still melting before they are completely incinerated. This allows these materials to pass through the grid and cause problems.
Materials in shell or clustered form	Yes	These materials can block the filler funnel, cause logistical defects and will incompletely burn.
Too high a temperature	Yes	A temperature of more than 35 degrees of delivered waste is a risk of fire in the bunker.
Fire-hazardous substances	Yes	The undesired effect is the risk of a fire in the bunker. Examples include waste that is scalding, explosive, smouldering or burning, has a flash point <100ºC, or contains lithium batteries.

Table 2.4 Material properties that may lead to rejection in a cement kiln for clinker production

Material property of a waste stream	Technical reason for refusal[109]	Material characteristic explanation
Too many large materials	Yes	All (secondary) raw materials fed into the cement kiln should burn at temperatures of 1450ºC sufficiently fast to ensure clinker quality.
Too many long materials	Yes	All (secondary) raw materials fed into the cement kiln should burn at temperatures of 1450ºC sufficiently fast to ensure clinker quality.
Too bulky materials	Yes	All (secondary) raw materials fed into the cement kiln should burn at temperatures of 1450ºC sufficiently fast to ensure clinker quality.
Materials that are too small in length	No	Not applicable
Too much dust-like material	No	Not applicable
Too low density	No	Not applicable
Presence of pastelike substances	No	No, but the rates for processing in a cement kiln make high moisture percentages unattractive.
Too low a combustion value	Yes	Too low a combustion value for the (secondary) fuels makes it difficult to maintain the required temperatures (1450ºC) in the rotary furnace, but waste streams may still be suitable if the composition of the inert fraction is interesting.
Too high a combustion value	No	The maximum combustion value for the fuels of a cement kiln is 40 MJ/kg as received. There are no common solid fuels with a higher heating value.
Elementary composition of ash fraction	Yes	The basic composition of the ash fraction of a waste material used in a cement kiln should fit into the raw material mix for the final cement produced. For example, phosphate and sulphate may be useful on the one hand, but may be limiting if concentrations are too high.
Metals	Yes	The presence of metals and iron/steel in particular has a negative impact on the quality of the final cement produced by rust formation.

109 This is generic. There will always be installations where a characteristic can still be a reason for refusal. For example, in the case of large materials, if the sorting plant does not have the right shredder.

Too many harmful elements	Yes	Examples of harmful elements in materials are: 1. Halogens such as chlorine, fluorine, bromine and iodine harm the process and the cement produced. 2. Heavy metals are bad for cement quality or emissions.
Presence of perturbants	Yes	This is a broad category of substances that pose a risk to staff or the sorting facility for various reasons if these substances are part of a mixed waste stream to be sorted. Examples include asbestos, glass, isocyanates (e.g. PUR), cables, pipes, ceramic materials, aerosols, sharp and cutting materials, residual household waste in the raw state, animal carcasses, medical waste and hazardous waste not derived from methanol or petroleum.
Too much Very Substances of Concern (SVHC)	No	Except for PCBs and heavy metals, no attention is paid to SVHCs. All organic SVHCs will be placed in the rotary furnace

Material property of a waste stream	Technical reason for refusal[6]	Material characteristic explanation
		dissolved and will also react to most or most of the mineral SVHCs in other minerals.
Presence of poorly combustible materials	Yes	These materials will not burn sufficiently rapidly. For example, materials with flame retardants.
Presence of materials melting during a slow combustion process	No	Due to the much higher temperatures this effect does not occur in a cement kiln used for clinker production.
Materials in shell or clustered form	Yes	In any event, these materials do not meet the maximum particle size requirement.
Too high a temperature	Yes	A temperature of more than 35 degrees of delivered waste is a risk of fire in the logistics process prior to the rotary furnace.
Fire-hazardous substances	Yes	Some flammable substances present a risk of fire hazards in the logistics process prior to the rotary furnace.

Annex 2

The step-by-step plan in [section 7.4.2 'Are mitigating measures possible?'] has been developed for a number of wastes. This has resulted in a number of fact sheets being included in this guide. These wastes are the following:

1. Plastic film from agriculture (agricultural film)
2. Binding strings and clips
3. Fishing nets
4. Digestate from residual waste
5. STP sludge
6. Fine fraction from metal shredding (SLF)

The factsheets were prepared in 2021, and the processing costs indicated in the tables are based on prices during that period. It is important to note that currently the costs may be different. This applies in particular to energy-intensive processes.

Factsheet

Waste specification

Tabel

1: Agricultural film

dust

1: Description of agricultural film waste

Aspect	Explanation / description
Waste description	Agricultural plastic means contaminated nylon and tapering strands as well as agricultural foil and cloths, including silage films, wrap stretch bales.
Bssa category	40: Plastic
CMP Waste Plan	Waste plan 10: Plastic
Minimum standard for processing	Mixed plastic: • Sorting or other processing with the purpose of separating thermoplastics, thermosets and elastomers for further processing according to the respective minimum standards described in this table or the [Waste plan tyres and other rubber]. Thermoplastics (e.g. PP, LDPE & HDPE): • Recycling.

Assessment framework mitigation measures

The table below describes the technical undesirable characteristics of agricultural film with mitigating measures for the processing of agricultural film. In the last column, if available, an estimate of the costs is made for the mitigation measure in question.

Table 2: Mitigation measures for agricultural film

Processing type	Technical undesirable characteristics	Mitigating technique for the undesirable characteristic	Estimate costs
Recycling with or without prior sorting	Maximum material size, maximum material length	• Shredder down • Reduce with rotor scissors	+/- € 60 - 100
	Recycling interfering substances, contaminated agricultural film	• Separation at the source (providing sweeping clean) • Post-separation (pre-sorting of coarse parts, washing and/or seven adhering dirt and stones)	
Energy recovery in waste incineration plants	Maximum material size, maximum material length, maximum material volume	• Shredder down • Reduce with rotor scissors	+/- € 60 – 100 (*)
	Materials in shell or clustered form	• Pull apart with gripping machines • Shredder down • Reduce with rotor scissors (clipping)	
	Recycling interfering substances, contaminated agricultural film	• Separation at the source (providing sweeping clean) • Post-separation (pre-sorting of coarse parts, washing and/or seven adhering dirt and stones)	
	Too high a combustion value	Mixing with low calorific value Waste within the fuel consumption limits (bunker management)	
Energy recovery in cement kiln	Maximum material size, maximum material length, maximum material volume	• Shredder down • Reduce with rotor scissors	Depends on pollution From €150

Assessment

Figure Following the step-by-step plan in section 7.4.2 of this guide

(*) The total of reduction, mixing and incineration can be carried out at about EUR 195 provided that the acceptance requirements are met (not too much pollution).

3: for agricultural film

Conclusion:

Factsheet

Waste specification

Tabel
Following the step-by-step plan (see observations on the various steps in the)
Figure), it follows that granting an exemption for the landfilling of agricultural film is not an option in general.

2: Nylon tapers and clips from horticulture

dust

3: Description of waste binders and clips of horticulture

Aspect	Explanation / description
Waste description	In greenhouse horticulture, auxiliary materials such as strings, clips and crop hooks are used on a number of crops such as tomatoes, sweet peppers, cucumbers and aubergines to support the growth and crop loss of the plants during cultivation. At the end of a crop cycle, a cash rotation takes place in which all crop residues and auxiliary materials are removed and the greenhouse is thoroughly cleaned and disinfected. Free binding strings and clips
Bssa category	40: Plastic and rubber waste
CMP Waste Plan	Waste plan 10: Plastic
Minimum standard for processing	Mixed plastic: • Sorting or other processing with the purpose of separating thermoplastics, thermosets and elastomers for further processing according to the respective minimum standards described in this table or the [Waste plan tyres and other rubber]. Thermoplastics (e.g. PP, LDPE & HDPE): • Recycling.

Mitigating actions

The table below describes the technical undesirable properties of binding strings and clips, with mitigating measures for the processing of binding strings and clips. In the last column, if available, an estimate of the costs is made for the mitigation measure in question.

Table 4: Mitigation measures for binding strings and clips

Processing type	Technical undesirable characteristics	Mitigating technique for the undesirable characteristic	Estimate costs
Recycling	Interfering substances for recycling, pollution	Sorting, washing and sieving	+/- € 60 - 100
	Materials in shell or clustered form	• Separation at the source for enveloping, technique not applicable • Shredder down	
Energy recovery in waste incineration plant	Recycling interfering substances, organic pollution	Washing	+/- € 60 – 100 (*)
	Materials present in are linked together in a clustered way	Shredder down	
Energy recovery in cement kiln	Maximum size and length of materials	Shredder down	*Depends on pollution* From €150

(*) The total of reduction, mixing and incineration can be carried out for around EUR 195, provided that the acceptance requirements are met (not too much pollution).

4: for horticultural bindings and clips

Assessment

Figure Following the step-by-step plan in section 7.4.2 of this guide

Conclusion:

Following the step-by-step plan (see remarks on the various steps in the figure), the conclusion is that granting an exemption for the deposition of optometrical strings and clips from horticulture is not an option in general.

Factsheet

Waste specification

Tabel

3: Fishing nets

dust

5: Fishing net waste description

Aspect	Explanation / description
Waste description	The waste fishing nets consists mainly of discarded and broken fishing nets, fishing lines, and fishing gear vault. Fishing nets are made of synthetic yarn and are therefore plastic. Often contaminated with both organic and inorganic material.
Bssa category	40: Plastic and rubber waste
CMP Waste Plan	Waste plan 10: Plastic
Minimum standard for processing	Mixed plastic: • Sorting or other processing with the purpose of separating thermoplastics, thermosets and elastomers for further processing according to the respective minimum standards described in this table or the [Waste plan tyres and other rubber]. Thermoplastics (e.g. PP, LDPE & HDPE): • Recycling.

Mitigating actions

The table below describes the technical characteristics of fishing nets which are not favourable to fishing with mitigating measures for the processing of fishing nets. In the last column, if available, an estimate of the costs is made for the mitigation measure in question.

Table 6: Fishing net mitigation measures

Processing type	Technical undesirable characteristics	Mitigating technique for the undesirable characteristic	Estimate costs
Recycling	Interfering substances for recycling, pollution	Sorting, washing and sieving	+/- € 60 - 100
	Materials in shell or clustered form	Shredder down	
Recycling of fishing nets	No specific	Not applicable	+/- EUR 250
Energy recovery in waste incineration plant	Recycling interfering substances, organic pollution	Washing	+/- € 60 – 100 (*)
	Materials present in are linked together in a clustered way	Shredder down	
Energy recovery in cement kiln	Maximum size and length of materials	Shredder down	*Depends on pollution* From €150

(*) The total of reduction, mixing and incineration can be carried out for around EUR 195, provided that the acceptance requirements are met (not too much pollution).

5: for fishing nets

Assessment

Figure Following the step-by-step plan in section 7.4.2 of this guide

Conclusion:

Based on the step-by-step plan (see the comments on the various steps in the figure), alternatives to landfill appear to be technically and financially possible. However, there is a lack of processing capacity for these flows (see further analysis of the assessment framework,).

Factsheet

Waste specification

Tabel

Tauw, 2021) is the reason for granting an exemption.

4: Digestate from residual waste

dust

7: Description of waste digestate from residual waste

Aspect	Explanation / description
Waste description	The Organic Wet fraction (ONF) separated from post-separated household waste can be digested. This creates green gas and digestate.
Bssa category	15b or partial streams of residues from the manual and mechanical processing of streams
CMP Waste Plan	Waste plan 1: Residual waste Waste plan 58: Residues
Minimum standard for processing	**Waste plan 1:** Residual waste remaining after sorting or otherwise processing residual household waste (small and bulky) and residual fine business waste • Processing according to the [Residues Waste Plan] **Waste Plan 58:** residues from the processing of residual household waste; residues from the processing of residual waste from businesses; • Dispose by incineration. • Primary use as fuel may only be carried out within installations for which emission control is regulated in special regulations and/or in an environmental permit that can lay down guarantees for people and the environment. This means that the sale or processing of residues as part of or in feed, aircraft, other mobile applications or for forms of use outside such installations is not permitted. To this end, the Authority will include guidance on how to authorise processors where necessary.

Mitigating actions

The table below describes the technical undesirable properties of digestate with mitigating measures for digestate processing. In the last column, if available, an estimate of the costs is made for the mitigation measure in question.

Table 8: Mitigation measures for digestate from residual waste

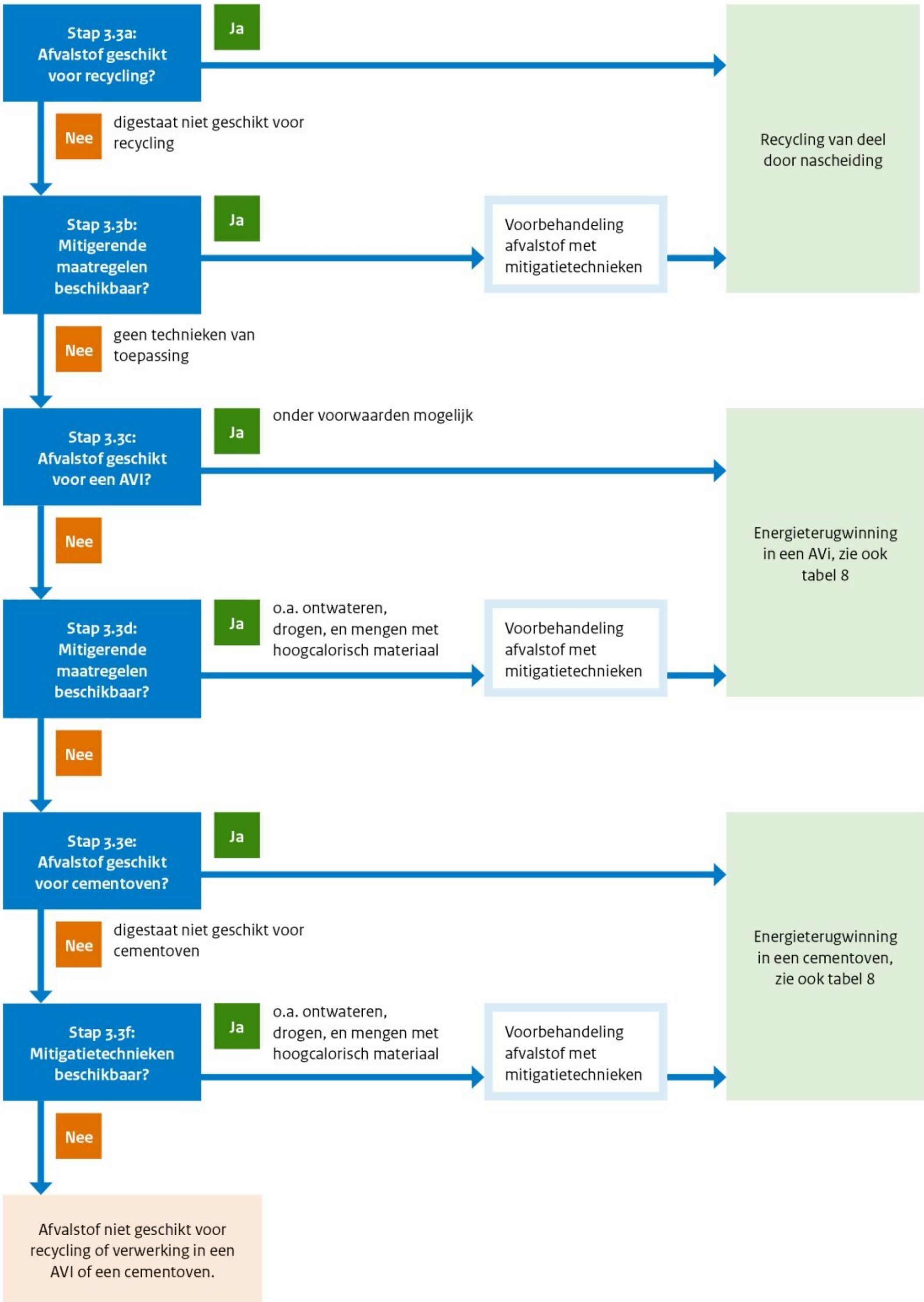
Processing type	Technical undesirable characteristics	Mitigating technique for the undesirable characteristic	Estimate costs
Recycling	n/a	n/a	n/a
Energy recovery in waste incineration plant (*)	Pastelike materials present, no solid or semisolid waste	Dewatering and/or drying to a sufficient solid or solid	€ 100 – 140
	Too low a combustion value	After dewatering and/or drying solids, mixing the supply to a bunker of the combustion unit with waste materials of high combustion value	€ 120 - 140
Energy recovery in cement kiln	Pastelike materials present, no solid or semisolid waste	Dewatering and/or drying to a sufficient solid or solid	€ 100 – 140
	Too low a combustion value	After dewatering and/or drying solids, mixing the supply to a bunker of the combustion unit with waste materials of high combustion value	€ 120 – 160

(*) Digestate can be incinerated, but not every incineration plant can process non-semisolid streams in their kiln. If an injection system is in place, digestate (like sludge) can inject the material just before the flame. AEB and Attero may process such flows (depending on the dry matter content).

6: Through the step-by-step plan of Section 7.4.2 of this guide for digestate

Assessment

Figure



Conclusion:

Following the step-by-step plan (see observations on the various steps in the) Figure), it follows that granting an exemption for the deposit of digestate is not an option in general.

Factsheet 5: STP sludge

Waste specification

Table 9: Description of waste STP sludge

Aspect	Explanation / description
Waste description	Water purification sludge from the biological purification of wastewater. Sludge produced in sewage treatment plants (STPs).
Bssa category	21: Sludge from biological waste water cleaning facilities.
CMP Waste Plan	Waste plan 15: water purification sludge
Minimum standard for processing	The following processing methods are permitted: • Thermal processing, whether or not after pre-drying, leading to oxidation of the organic matter. • Use as a processing agent in Hydrostab for application in a landfill. • Recovery of sludge (e.g. phosphate, bioplastics, alginate, etc.) with a marginal note that the residue left after recovery should not be landfilled. The following forms of processing are expressly prohibited: • Wet oxidation and pyrometallurgical melting • Drying or other processing prior to landfilling
Processing capacity in 2020	Total capacity: 1.445.600 tonnes/year Under-capacity: around 5% (currently largely absorbed by exports to Belgium)

Mitigating actions

The table below describes the technical undesirable properties of STP sludge with mitigation measures for the processing of STP sludge. In the last column, if available, an estimate of the costs is made for the mitigation measure in question.

Table 10: Description of waste STP sludge

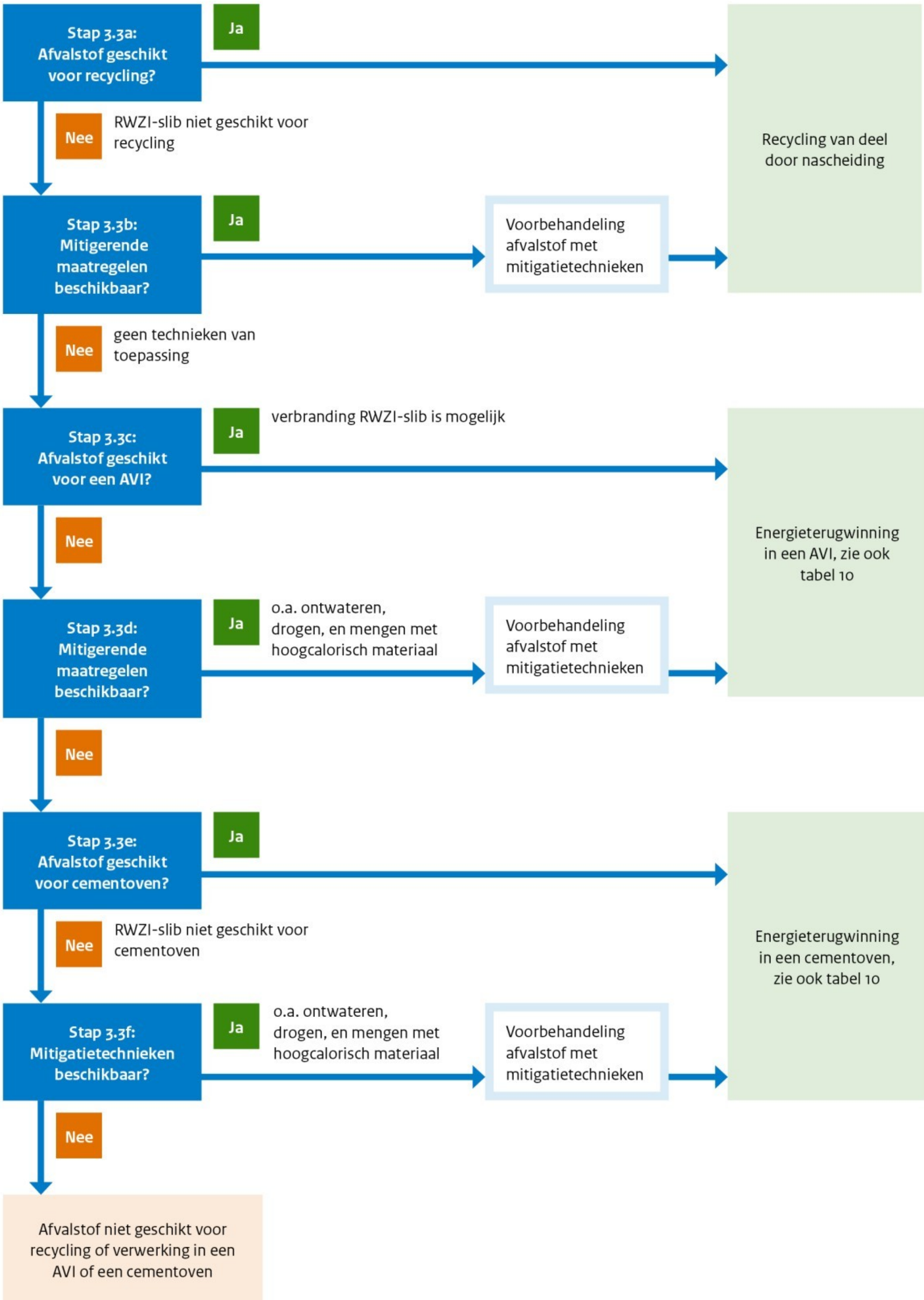
Processing type	Technical undesirable characteristics	Mitigating technique for the undesirable characteristic	Estimate costs
Recycling	n/a	n/a	n/a
Energy recovery in waste incineration plants	Pastes present, not semisolid waste	Dewatering and/or drying to solids (*)	€ 100 – 120
	Too low a combustion value	Dewatering and/or drying to solids* and mixing of supply to a bunker of combustion units with wastes of high combustion value	
Energy recovery in cement kiln	Pastes present, not semisolid waste	Dewatering and/or drying to solids (*)	€ 100 – 120
	Too low a combustion value	Dewatering and/or drying to obtain a solid (*) and mixing of supply to a bunker of combustion units with waste materials of high combustion value	

(*) Dewatering of sludge is already carried out at a sewage treatment plant

7; How to follow the step-by-step plan of section 7.4.2 of this guide for STP sludge

Assessment

Figure



Conclusion:

Following the step-by-step plan (see observations on the various steps in the) Figure), it follows the conclusion that granting an exemption for the disposal of sewage sludge is generally not an option.

Factsheet 6: Light fine fraction for metal shredding (SLF)

Waste specification

The waste is described in the table below.

Table 11: Waste description Light fine fraction for metal shredding (SLF)

Aspect	Explanation / description
Waste description	This is a light fine fraction remaining after the reprocessing of the SLF from metal shredding.
Bssa category	27b: Mixed partial streams or residues from the manual and mechanical processing of the streams referred to in 27a. (27: Shredder waste)
CMP Waste Plan	**Waste plan 23**: Shredder waste
Minimum standard for processing	Vehicle shredder waste and Other shredding waste Sorting, post-separation and other forms of processing aimed at (cumulative): • recycling of metals present, • as much as possible recovery of the other components, • limiting landfilling to an inert residue only, and • limiting this inert residue to be landfilled to a maximum of 5% of the input from the shredder facility. Consideration should also be given to the deposit by third parties of (parts of) fractions deposited for further processing.

Mitigating actions & Costs

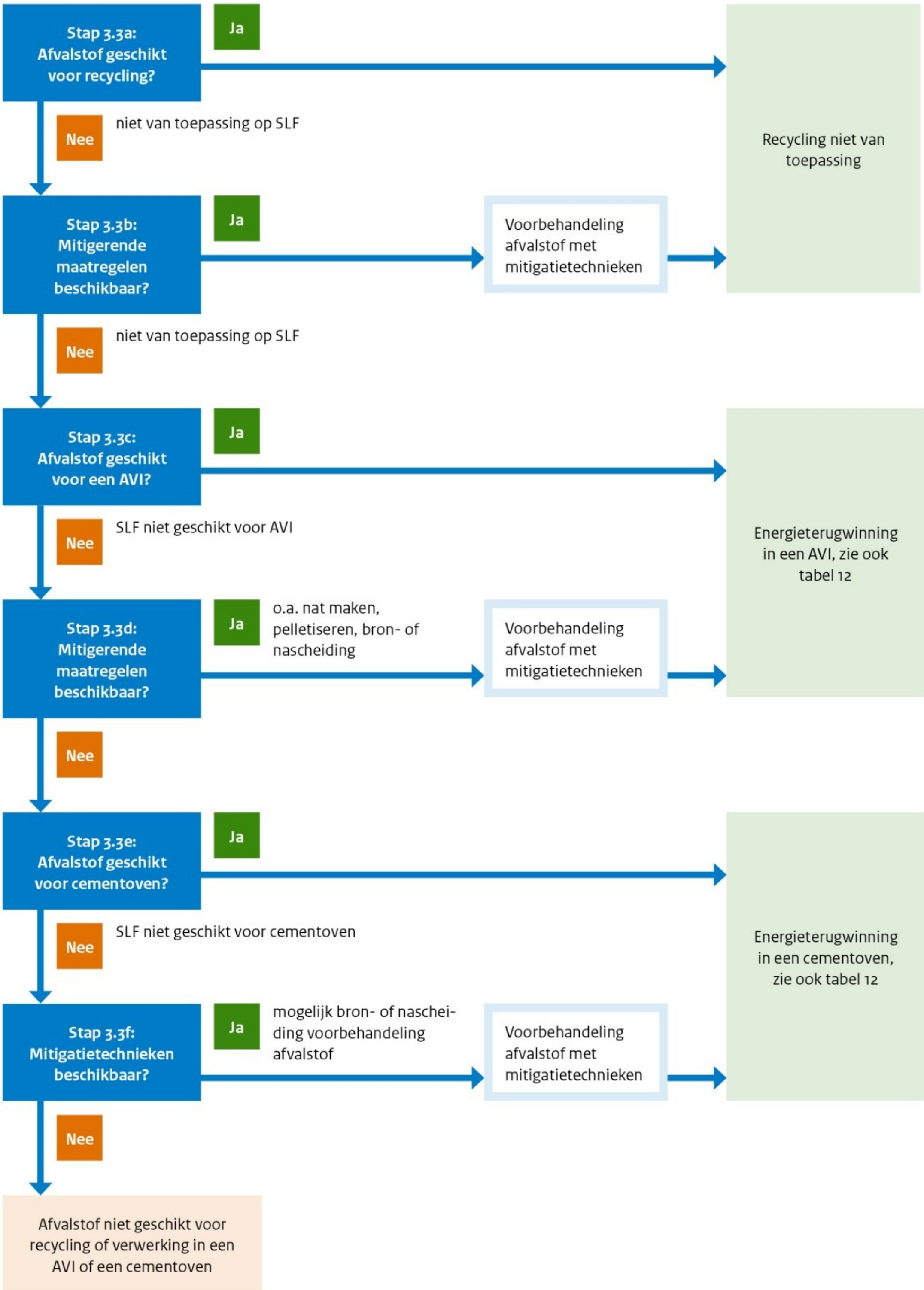
The table below describes the technical undesirable properties of fine fraction from SLF with mitigating measures for the processing of SLF. In the last column, if available, an estimate of the costs is made for the mitigation measure in question. Table 12: Waste description Light fine fraction for metal shredding (SLF)

Processing type	Technical undesirable characteristics	Mitigating technique for the undesirable characteristic	Estimate costs
Recycling	n/a	n/a	n/a
Energy recovery in waste incineration plants	Dust-like material	Wet or pelletising	€ 130 – 190
	Too high a combustion value	Mixing of supply to a bunker of the combustion unit with waste of low combustion value.	
	Too many harmful elements, presence of sulphur and chlorine (PVC)	• Source separation for submission to shredder, technique not applicable • Post-separation, removal of interfering substances afterwards (fraction may not meet input specifications)	
	Presence of poorly combustible materials	Source separation for submission to shredder, technique not applicable	
Energy recovery in cement kiln	Too many harmful elements, presence of sulphur and chlorine (PVC)	• Source separation for submission to shredder, technique not applicable • Post-separation, removal of interfering substances afterwards (fraction may not meet input specifications)	€ 120 - 150
	Presence of poorly combustible materials	Source separation for submission to shredder, technique not applicable	

8: Continuation of the step-by-step plan in section 7.4.2 of this guide for the light fine fraction for metal shredding (SLF)

Assessment

Figure



Conclusion:

Based on the step-by-step plan (see the comments on the various steps in the figure), alternatives to landfill appear to be technically and financially possible. However, the granting of a waiver for a specific defined residual flow seems justified (see Detailed Analysis of the Assessment Framework, Tauw, 2021).

anteagroup

Environmental impact report

Circular Materials Plan

Antea Group

Understanding today.
Improving tomorrow.

project number 483395
Final
25 June 2024

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Environmental impact report

Circular Materials Plan

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Final
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MER CMP

Main report

25 June 2024

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1. About this environmental impact report

1.1 Circular Materials Plan (CMP)

The National Waste Management Plan (LAP) sets out the framework for waste management. It acts as a tool for collecting all waste policies and determines which activities are allowed and which are not. The LAP should be taken into account by the competent authority when carrying out the licensing, supervision and enforcement tasks (VTH). The focus of this LAP is on sound waste management, and describes in particular the processing of materials during the waste phase.

The existing LAP3 will be followed up by the Circular Materials Plan (CMP). This plan will give more weight to the front of the chain, i.e. the stages before a material becomes waste. It is important for a circular economy that, in addition to good waste management, waste prevention and the proper use of raw materials (in order to keep them in the economy as much and for as long as possible) are paramount.

The LAP3 contains sector plans that incorporate the policy for specific waste streams. A sector plan primarily focuses on the waste stage of a material. The CMP describes — where applicable — choices of support for high-quality processing under the minimum standard. This includes pre-waste steps such as design, production and (re)use.

1.2 Why this EIA?

The environmental impact assessment is a procedure whose main objective is to give full consideration to the environmental interest in the preparation and adoption of plans and decisions. For example, an environmental impact assessment has also been prepared for the CMP for the purpose of substantive policy development.

This environmental impact assessment presents the environmental impacts of specific policy issues. Alternatives have been developed for these policy issues. The elaboration of these alternatives in policy may then be integrated into the CMP. This Environmental Impact Assessment (EIA) thus supports (strategic) policy choices that may be incorporated into the CMP. The expected impact of these policy issues and alternatives is described in this EIA.

This EIA covers the following topics:

1. Generic topics:
   - Immobilisation and use as a generator of the circular economy (CE)
   - Health care substances and the CE policy
   - Import/Export; Residue recycling

2. The minimum standard tool:
   - Minimum standard general; accelerated raising of minimum standards
   - Minimum standard general; distinguishing between forms of recycling
   - Specific minimum standards in sector plans; minimum standard sector plans 1, 2, 9, 27 and 28: incineration vs recycling and landfilling.

1.3 Procedure

At the start of this environmental impact assessment, a Note on the Scope and Level of Detail (NRD) has been prepared[110]. This NRD sets out the delineation of the study to be conducted and the alternatives to be explored. On 4 October 2022, the EIA Commission issued an opinion on this ETD. The NRD has also been made available for inspection in a consultation procedure. The main topics on which the views submitted and the opinion of the EIA Committee were based were:

110 NRD for the EIA plan for the Circular Materials Plan 1.0, Ministry of Infrastructure and Water Management, April 2022.

- the number of topics in the NRD and the level of ambition in the CMP
- the positioning of the CMP and the inclusion of goals and the clarification of legal and other frameworks in this regard.

The Reaction Note on Views explains how views and advice from the EIA Committee have been taken into account[111]. The EIA also takes account of the feedback received. The EIA is not suitable for extensive elaboration of the way in which processed reaction at individual level has been taken into account.

The updated NRD adds some explanatory sentences and specific aspects to several policy issues. For some alternatives, possible influences of other policy documents have been highlighted. For the first policy issue, a distinction has been made between alternatives to immobilisation and use as an additive in shaped building materials. Furthermore, 'economic feasibility' has been added as an impact to be examined.

Like the NRD, this Environmental Impact Report is also made available for inspection and submitted to the Commission for an EIA.

1.4 Approach in the partial examinations

This EIA is carried out on the basis of partial examinations. Separate sub-reports have been prepared for this purpose, containing the analyses by policy theme, as presented in section 1.3. The analyses are based on a description of the baseline situation for the respective policy theme, a description of the alternatives and an assessment of their (environmental) impact. The report presented here is the main report. This report presents an overarching view across all policy themes.

111 Reaction Note on Views – NRD for the Environmental Impact Assessment for the Circular Materials Plan, Ministry of Infrastructure and Water Management, January 2023.

1.5 Assessment framework

The assessment of alternatives to the various policy issues has, as far as possible, been carried out using a uniform assessment framework. This assessment framework distinguishes between target-area and impact assessments. Target ranges include circularity and landfill/incineration (see Table 1.1), while effects are environmental effects and realisability (see Table 1.2).

Table 1.1: Target Scope Assessment Framework

Circularity target range	Efficient use of resources
	Stimulating high-quality waste processing
	Impact on the quality of secondary materials, including in a possible next cycle of recycling
Landfill and incineration target range	Contribution to reducing landfilling and incineration

Table 1.2: Impact assessment framework

Environmental impact	Greenhouse gas emissions
	Energy use
	Water use
	Nitrogen emissions
	Risks to man and the environment from spreading harmful substances
Realisability	Practicability and enforceability (government)

	Feasibility and compliance (market)

The assessment of alternatives has revealed specific impacts or concerns (per component) which are relevant for the assessment, but which are not included in the assessment framework. In these cases, the assessment framework has been complemented by specific indicators. A five-point scale was used when assessing target achievement and impact (see Table 1.3). The assessment is always relative to the baseline situation. In principle, the assessment is qualitative. Where possible, it is supported by (semi)quantitative evidence.

Table 1.3: Rating scale

++	Definite and substantial positive impact
+	Perceived and/or limited positive impact
0	Neutral effect
-	Suspected and/or reduced negative impact
- -	Definite and substantial negative impact

The assessment framework and methods are described in the partial reports. Where relevant, the evaluation framework has also been developed in order to specify how it has been supplemented by criteria.

2. Findings from partial examinations

This section presents the main findings of the policy issues, as described in the sub-reports:

- Section 2.1: Immobilisation
- Section 2.2: Use as a aggregates
- Section 2.3: Health care substances and the CE policy
- Section 2.4: Import/Export; Residue recycling
- Section 2.5: Minimum standard general; accelerated raising of minimum standards
- Section 2.6: Minimum standard general; distinguishing between forms of recycling
- Section 2.7: Specific minimum standards in sector plans; minimum standard sector plans 1, 2, 9, 27 and 28: incineration vs recycling and landfilling.

The 'immobilisation' and 'use as aggregates' topics are described in one sub-report. In this section, these topics are dealt with separately.

2.1 Immobilisation

2.1.1 Objectives and the alternatives considered

In a circular economy, materials are re-used as much as possible to form other materials or products after use. This also applies to building materials. By materials that do not meet the requirements for building materials – such as certain bottom ash, fly ash, furnace slag or contaminated soil
- Either to be treated with a binder (immobilise) (treated in section 2.1) or incorporated as an aggregate in a formed building material, they may still meet the requirements for building materials and be given useful application (treated in section 2.2). The immobilisation process results in a material referred to as 'immobilisate'. A formed building material is produced when the additive is used.

In cases where contaminants are present in the material used, they end up in the immobilisate. There are therefore two risks, the first being that contamination may occur during the use phase, for example, through leaching, erosion or wear. The Soil Quality Decree can provide more guidance with clear frameworks. The second risk is that in (subsequent) recycling applications, after the use phase of the immobilisate or the shaped building material, contaminants go unnoticed through the chain or enter the environment.

The fact-finding study shows that, in almost all cases, immobilisation in concrete involves the processing of waste materials that contain contaminants and therefore do not meet legal compositional and/or leaching requirements for use as building materials. As a result, impurities are taken from the starting material in the immobilisate and remain in the cycle. This leads to uncertainty as to how immobilisate will behave in the longer term in the applications concerned. Furthermore, it is possible that, during a subsequent use and processing cycle, it is not known that a contaminated raw material has been used in the past in a material (to be reprocessed at that time). Therefore, there is a risk of undetected dispersion of contaminants into the environment and a potential for contamination of the quality of raw materials of the future. In light of the environmental principles of precaution and preventive action, the EIA therefore looks at a number of alternatives to limit immobilisation or to ensure that the risks of unmarked contamination of the material chain are/remain mitigated.

Therefore, for the policy issue of 'immobilisation', the following alternatives have been considered in addition to the baseline situation (iA.a., the zero alternative):

- iA.b.: Immobilisation only if cleaning to a material that meets the requirements for non-formed building materials is technically impossible;
- iA.c.: Immobilisation only when it is certain that the immobilisate can be seen in the next cycle.
- iA.d.: Immobilisation only if the material itself already meets the requirements for non-moulded building materials (composition and leaching), with a deviation from a maximum percentage to be determined, e.g. 10%; iA.e.: Combinations of alternatives iA.b, iA.c and iA.d to be selected

2.1.2 Summary of the assessment

The effects of the alternatives are described in section 1 ‘Immobilisation and use as an additive’. An overview of these assessments is presented in Table 2.1.

iA.b. alternative

This alternative has a strong focus on cleaning. As a result, much of the contaminants contained in the relevant waste streams are removed from the cycle. Cleaning leads to clean materials that can be applied freely as non-formed construction materials and decreases the amount of immobilisate.

The concentration of contaminants and off-cycle extraction are the most positive effects of this alternative. The contribution to the circularity target is relatively small. This is because compared to the reference situation, this alternative is mainly a shift from one secondary building material (immobilisate) to another (cleaned, freely usable material). This shift in the characteristics of the flows produced by this alternative (relatively much clean, relatively better on average than in the reference situation). This facilitates usage in the next cycle for the cleaned, freely usable materials. However, if only the relatively small amount of immobilisate is considered, the assessment is negative. This is because in this alternative, only the non-cleanable flows can be converted into immobilisate. In this situation, the characteristics of the immobilisates are relatively less favourable than those of the reference situation. However, together with the relatively high amount of cleaned material being made available in this alternative, the assessment for the indicator ‘impact on the properties of the secondary materials’ is neutral to positive.

Table 2.1: Overview of assessments

	Efficient use of resources	Use of primary raw materials	+	0	0
		Ratio of renewable – non-renewable raw materials in products	0	0	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	0	0	0
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	+	0	+
		Share/percentage of substances moving to a lower level in the waste hierarchy	0	0	0
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	+	0	+
		Returnability	+	+	+
		Workability	+	0	+
	Contribution to landfill/incineration restrictions	Landfill volume per year	-	0	--
		Amount of incineration per year	0	0	0
Environmental impact	Greenhouse gas emissions	Emissions (in CO_2 equivalents)	+	0	+
	Energy use	Use of fossil fuels	+	0	+
		Energy use	+	0	+
	Water use	Water use	-	0	-
	Nitrogen emissions	Nox and NH_3 emissions	+	0	+
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	++	+	++
		Contribution to reducing exceedance of standards in soil, water and air quality	++	+	++
Realisability	Practicability and enforceability (government)	Legal enforceability	0	0	0
		Practical enforceability	0		-
		Financial enforceability	-	-	0
		Indirect and/or long term costs	++	+	+
	Feasibility and enforceability (market)	Practicability practical	-	0	--
		Practical enforceability	-	0	0
		Economic feasibility	--	+	--

In this alternative, the amount of material to be deposited (compared to the reference) increases slightly. This is mainly due to the increase in the amount of cleaning residue to be landfilled. The increase in landfill is negative in relation to the landfill reduction goal, but positive because landfilling leads to long-term (in principle perpetual) contamination being kept out of the environment. Concentration of contaminants in a landfill reduces risks to people and the environment.

Due to the increased commitment to cleaning, energy and water use is higher than in the baseline situation. On the other hand, the use of cement is reduced, which has a positive impact on energy consumption. For the market, this alternative is a clear option but the cost of treating the bone in the waste streams will be higher. A secondary positive consequence of this alternative is that the market will have more certainty about the demand for cleaning capacity. This can contribute to increasing the market's willingness to invest in waste-cleaning facilities. For the shorter (transitional) period, this alternative may result in insufficient cleaning capacity.

iA.c alternative

This alternative imposes restrictions on immobilisation. Immobilisate can only be used if it remains in the long-term view. As such, this alternative has no further restrictions or provisions on cleaning or immobilisation.

It is therefore expected that in this alternative, the most obvious choice is to create an immobilisate in cases where it is relatively easy to identify the immobilisate. As this is likely to be simpler and cheaper, even if measures are needed, immobilisation remains attractive and the shift from immobilisation to cleaning (in relation to the baseline) is small. The difference from the baseline regarding the proportion of cleaning versus immobilisation is therefore small. As with alternative iA.b, the contribution to the circularity target is relatively small. This is because this alternative is expected to have a small shift (compared to the reference situation) from one secondary building material (immobilisate) to another (cleaned, freely usable material). In this alternative, it is relevant how long-term visibility is achieved. Various variants have been identified for this purpose. Setting up and maintaining a registration system is an option. This can work well in principle, but requires a careful and robust (and long-term guaranteed) approach. In this variant, there are no restrictions on the works where the immobilisates may be used. As a result, immobilisates can be present 'everywhere'. This makes the system vulnerable. The other variants (logically combined with a registration system) involve limiting the use of immobilisates to recognisable applications (e.g. noise barriers) or in specific large works. In the future, these variants will reduce dependency on a registration system, as they can take into account the possibility of the presence of immobilisates (containing any contaminants contained therein).

The added value of this alternative is particularly relevant for the longer term. The image of materials containing contaminants reduces the risk of spreading contaminants at the end of the cycle of use compared to the baseline situation. This may also help to reduce the long-term costs for the public sector compared to the baseline situation. As the ratio of cleaning – immobilisation does not change much compared to the baseline, there is little difference in the environmental effects compared to the baseline. The impact of this alternative on practicability (government) and feasibility (market) is neutral to slightly negative. The latter is due to the much greater effort needed to keep track of the alternatives.
These are mainly in the public administration and, to a lesser extent, in the market. Taken together, this alternative seems to consist of fairly easy-to-implement measures that can have a positive impact on environmental quality in the longer term. This is due to a higher level of assurance that pollutants will not be spread into the environment after the end of the period of use. This alternative could be characterised as a no-return measure: the effort is relatively small, but there is a positive impact. What is important, however, is that a robust system must be in place to keep the immobilisates in the image.

This alternative leads to less significant investment in cleaning capacity (compared to alternative IA.b). However, an incentive can be expected to develop systems and techniques aimed at keeping immobilised waste on a long-term basis.

iA.d alternative

Alternative iA.d is to some extent similar to alternative iA.b. There is a shift (compared to the reference situation) from one secondary building material (immobilisate) to another (cleaned, freely usable material). In iA.d, cleaning is less compulsory, but in practice this alternative may mean that cleaning is de facto the only realistic option. It is important to note the quality (nature, complexity and concentrations of contaminants) of waste streams and the efforts (costs) required to clean materials to achieve the maximum permitted deviation or to achieve the standard of free application, and how the costs of any additional cleaning step relate to the costs of immobilisation.

Alternative iA.d is more complex in terms of image and rating than alternative iA.b. The cleaning requirement is less flexible than in iA.b. As a result, the impact on material to be landfilled is also more negative than in iA.b. Furthermore, the practicality for the market is more negative than in iA.b., because in this alternative everything will have to be cleaned, and then see what needs to be immobilised.

Alternatives compared

With regard to the effects on the target range (consumption of raw materials, reduction of landfilling and incineration and emissions), the differences between the three alternatives are relatively small and in comparison with the baseline situation. This is due, in the case of alternatives iA.b and iA.d, to a shift within the secondary raw materials (from a relatively large immobilisate to a relatively high amount of clean and freely usable material). In alternative iA.c, this shift is less prevalent, with the expectation that keeping 'recognisable' is a (financially) more attractive option for the market than cleaning. The main added value of the three alternatives compared to the reference is to remove contaminants from the cycle. This has been assessed in terms of risks to people and the environment. Alternative iA.b is the most effective in terms of cleaning and, to a lesser extent, of iA.d. For both of these alternatives, the impact is largely already observed in the first step in the chain. In these alternatives, contaminants are largely removed from the cycle and destroyed by storage in a controlled landfill. The result is, moreover, that the amount of material to be landfilled increases.

Alternative iA.c., the indicator 'risks to people and the environment' is a delayed impact: keeping the immobilised waste material in the image reduces the risk of it later entering the environment. Unlike alternatives iA.b and iA.d, the contaminants remain in the system. This means that there is still a risk of spreading in the environment in the future. This can be limited by setting rules for application (e.g. allowing application only in specific works or projects) and establishing and maintaining a registration system.

Looking at the other environmental impacts, it can be observed that alternatives iA.b and iA.d require more efforts. This can lead to increased energy and water use and emissions. However, there is a positive impact on CO2 emissions due to the reduced use of cement. Three alternatives are feasible for the administration, but the market requires efforts. Alternative iA.b is the largest due to the cleaning requirement and the smallest due to alternative iA.c., as efforts can focus on keeping immobilised waste material 'visible'.

For the longer term and given the goals behind it (limiting the use of raw materials and maximising the extraction of contaminants), alternatives iA.b and iA.d are more positive than alternative iA.c. It is important to note that these alternatives are an incentive for the market to achieve cleaning capacity.

iA.e: possible combinations of alternatives iA.b, iA.c and iA.d. The CMP builds on the policy considerations of immobilisation. This EIA provides input for this. It is conceivable that combinations of the alternatives considered could be made. For example, a combination of two or more alternatives could achieve the best possible target and minimise impacts. These sections deal with possible combinations of alternatives. In addition, possible adjustments within the alternatives are considered to increase feasibility.

One option is the combination iA.b and iA.c. The effect of alternative 1A.b is that the amount of immobilisate will decrease significantly compared to the baseline situation. Only those materials that cannot technically be cleaned can be converted into immobilisate under this alternative. These materials are likely to contain relatively high and/or complex contaminants, as this may be the reason why cleaning is not possible. In the longer term, those immobilisates may present a risk of spreading contaminants at the end of their useful life. In order to reduce that risk, it is desirable to keep these immobilisates visible, in accordance with alternative iA.c. A combination of the alternatives iA.b (cleaning requirement) and iA.c (visual requirement) is therefore obvious.

As indicated above, alternative 1A.c offers several options for the image of immobilisates (containing contaminants). A robust and simple system, with as few dependencies as possible on techniques and systems, is preferable in the long term. From this point of view, an arrangement whereby immobilisates can only be used in certain types of works (such as noise) or in specifically large works (such as a large business park). This will make it more ambiguous for future generations where immobilisates may be possible
are found. Another advantage is that it also improves the opportunities for monitoring the possible spread of contaminants. Another option is to combine iA.b and iA.c with a more flexible cleaning requirement. Alternative iA.b sets the bar very high – always clean when technically possible. In practice, this can cause problems because cleaning can be very costly or because cleaning capacity is not (yet) available.

Consideration may therefore be given to a combined alternative in which the requirements of alternative iAb are relaxed, under the condition of keeping the immobilisates visible (iA.c). Here, the cleaning requirement (from alternative iA.b) is made less strict, for example by also taking into account the cleaning costs and/or the availability of cleaning capacity. This may also include flexibility and/or a phased approach to enable and encourage technical developments. For materials for which immobilisation is still possible in this case, the image of the immobilisates requirement is imposed. In this combination of iA.b and iA.c (image requirement), relaxing the cleaning requirement (iA.b) does not necessarily lead to immediate risks to humans and the environment.

A combination of the alternatives iA.b and iA.d is less obvious. Both alternatives are subject to cleaning obligations. However, in the case of alternative 1A.d, this is only relevant for materials with concentrations of contaminants above the maximum permitted deviation. A combined alternative is likely to lead to the same situation as iA.d.

Alternative iA.d is expected to produce more immobilisates than alternative iA.b, but the concentrations of contaminants are lower due to the maximum permitted error. As a result, for alternative iA.d., the image of the immobilisates adds relatively little to reducing the risk of dispersion of environmental pollutants at the end of the immobilisate’s useful life. On the other hand, if the image requires a relatively small effort, keeping immobilised waste material on the image contributes to further reducing the risk of spreading any contaminants.

2.2 Use as a flux

2.2.1 Objectives and the alternatives considered

In the Netherlands, aggregates are mainly used to produce concrete. This sand and gravel is mostly involved, but depending on the performance requirements of the concrete in question and the availability of sand and gravel, basalt, granite, limestone, quartz and concrete granulate can also be processed. These are raw materials that, together with water and binders, form the final concrete.
Increasingly, secondary raw materials are used as an aggregate. This includes raw materials such as pulverised coal fly ash, concrete granulate and incinerator bottom ash. In all cases, these are substances recovered from raw materials previously used, or substances that were previously considered waste and after processing are suitable for use as raw materials for concrete. Some secondary raw materials have properties that make them suitable for use as a binder in concrete. The use of secondary raw materials and the relative share of secondary raw materials (compared to primary raw materials) are expected to increase.
As with the Immobilise component, this component aims to keep (usable) materials in the cycle as much as possible (thereby limiting the use of primary raw materials as much as possible, while also removing contaminants from the cycle as much as possible, now or in the future, and minimising the dispersion of environmental pollutants.

For the policy question ‘use as a generator’, the following alternatives have therefore been considered in addition to the baseline situation (iB.a., the base case):

- iB.b.: Use as an additive only if cleaning into a material that meets the requirements for non-formed building materials is technically impossible
- iB.c.: Only use as a aggregate in a shaped building material if you are sure to image the resulting building material in a subsequent cycle
- iB.d.: Use only as a aggregate in a formed building material if it
- material itself already meets the requirements for non-moulded building materials
  (composition and leaching)
- iB.e.: Combinations of alternatives iB.b, iB.c and iB.d to be selected

2.2.2 Summary of the assessment

The effects of the alternatives are described in section 1 ‘Immobilisation and use as an additive’. An overview of this assessment is presented in Table 2.2.

Table 2.2: Overview of assessments

	Efficient use of resources	Use of primary raw materials	0	0	0
		Ratio of renewable – non-renewable raw materials in products	0	0	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	0	0	0
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	+	0	+
		Share/percentage of substances moving to a lower level in the waste hierarchy	0	0	-
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	0	0	+
		Returnability	0	+	+
		Workability	0	0	+
	Contribution to landfill/incineration restrictions	Landfill volume per year	-	0	--
		Amount of incineration per year	0	0	0
Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents)	-	0	-
	Energy and water use	Use of fossil fuels	-	0	-
		Energy use	-	0	-
		Water use	-	0	-
	Nitrogen emissions	Nox and NH3 emissions	-	0	-
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	++	+	++
		Contribution to reducing exceedance of standards in soil, water and air quality	++	+	++
Realisability	Practicability and enforceability (government)	Legal enforceability	0	0	0
		Practical enforceability	0	-	+
		Financial enforceability	-	-	0
		Indirect and/or long term costs	++	+	+
	Feasibility and enforceability (market)	Practicability practical	0	0	-
		Compliance with practical	-	-	0
		Economic feasibility	-	+	-

iB.b. alternative

In this alternative, it is stated that cleaning is necessary if technically possible. As a result, the use of raw materials is on balance approximately neutral. While there is a shift, assuming that there is demand for moulded building materials and that aggregates are necessary for their production, the availability of more clean aggregates results in and shifts.

The most important (positive) effect of this alternative is to de-cycle and keep contaminants out of cycle. This alternative results in materials that can be recycled relatively easily and without risks after the end of their service life. It should be noted that material that cannot technically be cleaned (under conditions) can still be used as a building material. It can be expected that this material is relatively highly contaminated and/or contains a wide diversity of impurities. The positive environmental impacts are balanced by the fact that, alternatively, more effort is required from the market than in the baseline situation. There are also limited negative impacts on energy and water use and emissions.

iB.c alternative

In this alternative, the incentive to clean is less pronounced than in alternative iB.b. It is expected that the image of the material can be relatively simple for formed construction materials. In the short term, this may result in the possibility of continuing to apply contaminated material (within the rules) as an additive. This means that pollutants (longer than in the case of iB.b. alternative) remain in the cycle.

Due to the relatively good traceability of the construction materials, this results in, on the one hand, a relatively good chance of materials being properly recycled at the end of the cycle, but, on the other hand, a relatively high proportion of contaminated materials being used as aggregates. Moreover, the relative ease of reference means that the additional effort and cost incurred by the market is also relatively limited. Together, this alternative can be seen as

a no-return measure that can also be properly combined with alternative iB.b.

Alternative iB.d

Alternative iB.d can be considered to be the most far-reaching of the three alternatives. The strict requirements for using additives make cleaning necessary. The preconditions for this are that landfilling should not be possible. It should be noted, however, that a number of important flows used as aggregates cannot be easily decontaminated. As a result, this alternative will have the greatest impact on de-pollution. The postponement of removal from the chain (which applies to alternative iB.c and to some extent to alternative iA.b) is also not relevant. Moreover, these rather strict requirements mean that the feasibility for the market has been assessed negatively against the baseline. Compared to the baseline situation, due to the increased cleaning effort, this alternative leads to a somewhat higher use of energy and water and an increase in the amount of cleaning residue to be landfilled.

Possible combinations

In considering the alternatives above, it has been indicated that in alternative iB.b it is still possible to use impurities in formed building materials. This means that there is a risk that pollutants may be dispersed in the environment at the end of the service life of these materials. A combination of iB.b. and iB.c. can reduce this risk. This may be combined with a nuance of the cleaning requirement included in alternative iB.b., for example by linking to clean-up costs and/or to the actual availability of cleaning capacity.

Alternative iB.d. alone already significantly reduces the risk of dispersion of environmental pollutants (compared to the baseline). One image addition adds little here. A combination of the alternatives iB.c and iB.d is also not logical.

2.3 Healthcare substances

2.3.1 Objectives and the alternatives considered

Substances of concern are substances that may (in the long term) cause irreversible effects on human health and the environment. Some of these substances have been identified as substances of very high concern (SVHCs). The Circular Economy Policy aims to obtain as many materials/secondary raw materials as possible from waste, unless such secondary raw materials contain impurities or substances of concern that make the recovery of those materials undesirable. This may be the case if, through leaching or by other means, substances of concern may spread from materials into the environment and thus pose a risk to humans and ecosystems. In such cases, the waste containing the care cannot be recovered and the waste must be removed from the cycle and kept.

In addition to the baseline situation (II.a), this EIA includes one alternative for this subsection:

II.b: Formulate policies for the treatment of specific substance/waste combinations in the respective chain or waste management plans (including for non-SVHC substances).

This alternative is also intended to assess whether substances of concern (not covered by the SVHCs) pose risks to health and the environment when recycling or recovering material from waste streams. This may be the case if substances of concern remain present in secondary materials resulting from the treatment of waste, which may pose risks to humans and the environment in the application of the materials, the use of the secondary materials as raw materials for new products and/or at the end of the period of use of the secondary materials concerned. If these risks are considered too high, the policy may focus on removing them from the cycle. This implies that for specific substance/waste combinations, a certain method of processing is referred to as the minimum standard. The question is how the reference situation, where this is not the case, relates to alternative II.b. In other words, expanding the current policy (focusing on SVHC risks, with only a very limited focus in the LAP3 on non-SVHC care substances) towards policy that focuses on a wider range of aspects on non-SVHC care substances to produce a positive environmental outcome.

Care substances are a very large and heterogeneous group of substances. These substances may be present in a wide range of waste types as well. It is waste with a very diverse composition, characteristics and potential in terms of the possibilities of transforming the waste into a secondary raw material. This EIA distinguishes a number of categories, taken from a study carried out by RIVM which contains a proposal for a further inventory of substances of concern in waste[112]. Based on the RIVM analysis, it can be observed that the presence of substances of concern is relatively high in certain types of waste. Environmental Management Compliance Policies can target those wastes that are known to have a (relatively high) probability of their presence. The RIVM report identified 9 substance groups. For a number of substance groups, the Memo suggests that they should not be taken into account further in the CMP exploration. In this EIA, the following substance groups were briefly considered: pathogens, drug residues, pesticides (biocides and plant protection products), PFAS, heavy metals and microplastics.

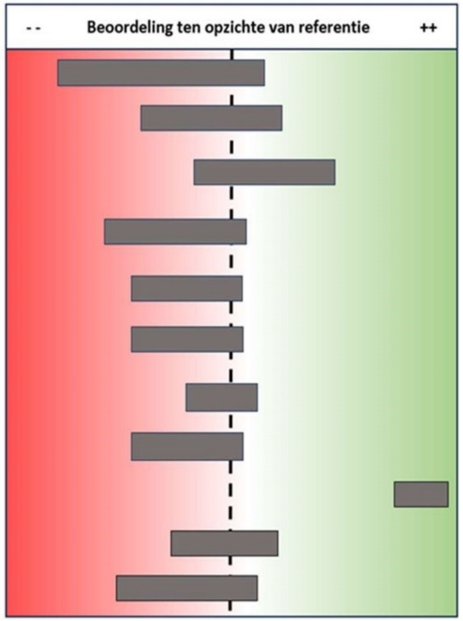
2.3.2 Summary of the assessment

Partial report 2 ‘substances of concern’ describes the effects of the alternative, and Table 2.3 provides an overview of this assessment. Due to the highly heterogeneous nature of the subject of SVHCs, a generic assessment is difficult. The assessment is therefore performed at a higher, more theoretical level and with a wide range of variation. This is shown in the figure above with beams.

112 RIVM, 2023: Memo Suggested type of care substances for CMP. Moreover, this Memo does not contain a definition of the concept of care substances.

Table 2.3: Overview of assessments

Thema	Subdoel / Indicator
Doelbereik circulariteit	Efficiënt gebruik van grondstoffen
	Stimuleren van hoogwaardige verwerking van afvalstoffen
	Effect op de kwaliteit van secundaire materialen, ook bij een eventuele volgende recyclingcyclus
Doelbereik storten en verbranden	Bijdrage aan het beperken van storten en verbranden
Omgevingseffecten	Emissie van broeikasgassen
	Energiegebruik
	Watergebruik
	Emissie van stikstof
	Risico's voor mens en milieu door verspreiden van schadelijke stoffen
Realiseerbaarheid	Uitvoerbaarheid en handhaafbaarheid (overheid)
	Uitvoerbaarheid en handhaafbaarheid (markt)



The policy intention (the alternative), in relation to waste, is to expand the SVHC policy with policies for specific combinations of substances of concern in the respective chain or waste management plans. This topic relates to a large and heterogeneous volume of substances of care and an unknown number of combinations of substances of care and waste for which the introduction of a separate minimum standard will be considered desirable (in due course). This implies that generic policies have little effect in themselves; effects will only be produced by further concretisation for certain substance-waste combinations.

The focus is on:

- The extraction of substances of concern requires treatment. In general, what are the methods related to categories of substances of concern?
- What does this treatment mean for the possibilities of rendering (cycle-wise) the remaining material useful?

Setting minimum standards for care waste has a (strong) positive impact on the indicator 'risks to people and the environment', in cases where there are risks that the care substances may spread in the environment and pose a danger to human health and the environment in the short or longer term. The strength of the positive impact, and the time horizon, varies depending on the substance/substance combination.

The effect of introducing minimum standards for certain waste care combinations is that the quantity of secondary raw materials will decrease, but (by removing the most contaminated batches) the average quality of secondary raw materials will improve.

On the other hand, for many waste care combinations, a minimum standard will reduce the target range for the other indicators compared to the reference situation and increase the environmental impact related to the use of energy, leaving aside exceptions.

This means that extending the target range for mitigating the risks may be associated with a decrease in the target range for the circular economy. This implies that the introduction of a minimum standard for a substance-waste-substance combination should be preceded by an analysis (LCA) analysing its advantages and disadvantages.

2.4 Import and export

2.4.1 Objectives and the alternatives considered

The processing of waste streams takes place in the Netherlands, but also beyond it. In a circular economy, waste brought in by cross-border transport or vice versa is also part of the waste treatment chain. Current regulations and policies on cross-border transport ensure that waste is recovered as much as possible. If this is not possible, (fractions of) the waste will be disposed of. This can be done, for example, by incineration (and therefore emissions from the incineration of the waste stream) or by landfilling. In a circular economy, the ambition is to minimise landfilling of waste and residues and to keep raw materials in the chain, for example by (preparing for) reuse and recycling.

This EIA emphasises the amount of residue to be landfilled in connection with the cross-border transport of waste and its processing. When processing waste, residues may arise in the country that processes the waste. The question is what the effects will be if the CMP is going to lead to a reduction in dumping abroad of residues of exported Dutch waste, but also a reduction in dumping in the Netherlands of residues after processing foreign waste transported to the Netherlands.
Sub-report 3 (Import and export) maps how the Netherlands plays a role in the cross-border transport of waste and its processing. In addition, the current policy in the LAP3 has been mapped out and the way forward can be directed towards a circular economy, with landfilling of waste as the main factor in this report. It also analysed the contribution or non-contribution of waste transport to the use of fossil fuels.

The objective of the topic is to assess to what extent a change in the policy, whereby the residue must or must not go back to the country of origin, may reduce the disposal fraction in the country of destination and the net impact on the Netherlands. This is in line with the Dutch desire to use self-sufficiency for landfill.
In addition to the baseline situation (III.a), the policy issue includes two alternatives:

- III.b In this alternative, in all[113] cases, the cross-border transport of waste will only be accepted if the residue to be landfilled is returned to the country of origin.
- III.c In this alternative, mandatory return of a fraction to be landfilled to the country of origin is mandatory in all situations, insofar as the fraction to be landfilled represents more than x% of the waste stream to be shipped.

Both alternatives have the same purpose, and the implementation is different only. The alternatives are assessed against the baseline (zero alternative III.a). In addition to these alternatives, there is conceivable another variant in which the return of residues to the country of origin is not controlled, but import or export is not permitted if more than a certain percentage of the batch of waste in question is landfilled.

2.4.2 Summary of the assessment

The impact of the alternatives is described in sub-report 3 ‘import and export’. An overview of this assessment is provided in Table 2.4.

Table 2.4 Overview of assessments

	Change in use of raw materials	Efficient use of primary raw materials	0	0

113 ‘All’ in this EIA expressly does not mean that any translation into the CMP does not leave the possibility of formulating diverging policies for specific cases.

		Ratio of renewable – non-renewable raw materials in products	0	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher grade in the waste hierarchy (higher quality processing)	0	0
		Share/percentage of substances remaining at the same level in the waste hierarchy	0	0
		Share/percentage of substances moving to a lower level in the waste hierarchy	0	0
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	0	0
		Returnability	0	0
		Workability	0	0
	Contribution to landfill/incineration restrictions	Landfill volume per year	+	+
		Amount of incineration per year	+	+
Environment	Greenhouse gas emissions	Greenhouse gas emissions	+	+
	Energy use	Use of fossil fuels	-	-
		Energy use	-	-
	Water use	Water use	0	0
	Nitrogen emissions	NO_x and NH_3 emissions	-	-
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of contaminants into soil, (ground) water or atmosphere	+	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+	+
Realisability	Practicability and enforceability (government)	Legal enforceability	0	0
		Practical enforceability	-	-
		Financial enforceability	0	0
		Costs for the public administration, direct and indirect and/or longer-term	0	0
	Feasibility and enforceability (market)	Practicability practical	-	-
		Practical enforceability	0	-
		Financial enforceability	0	0
		Economic feasibility	-	-

Both alternatives will result in a decrease in the amount of material to be landfilled in the Netherlands, compared to the baseline situation of a larger import than export. However, the impact is limited. This is because, for many transferred flows, the amount of residue to be landfilled is relatively small, in the order of 1% to a maximum of 10% of the initial amount, and represents 3% for RDF. Moreover, returning residue to the Netherlands and returning residue abroad may partly cancel each other. However, within the same stream, there may be a large difference in the amount of residue depending on how it is processed after shipment in the country of destination. Processing operations in the home country may result in less waste transport. This is positive for the use of energy and for the emission of greenhouse gases and nitrogen oxides. Furthermore, the information on IM and IC, which forms the basis of this analysis, is based on current policies.

The risk assessment for the spread of contaminants in the Netherlands is positive. It should be noted that, compared to the reference situation, the amount of waste that is recovered may decrease if less waste is imported due to the obligation to re-export the residual flows. This also means that less imported waste (and thus the contaminants contained therein) enters immobilised waste and formed building materials with residues as aggregates. However, although these concentrations are low and meet the requirements, imported freight is reducing pollution. This can also be seen as a positive environmental impact for the longer term. In practical terms, both alternatives are problematic. These are related to the fact that, at least for the waste streams treated by operation R1 incineration, it will not or hardly be possible in practice to transport the residual streams derived from the waste sent back. Indeed, the waste is mixed with other waste streams in the processing process. The alternatives will also result in additional administrative burdens for the market and public authorities.

Overall, the two alternatives appear to make a relatively small contribution to the ambition of reducing the amount of material to be landfilled in the Netherlands and the self-sufficiency objective. As a result of Alternative III.b, less waste for incineration is imported, a decrease in the amount of immobilisates and incineration residues can be expected in the Netherlands. For the Netherlands, this means that more contaminants are kept out of the cycle.

Alternative III.c thereby provides the possibility of more flexibility for specific flows and processing techniques in managing the obligation to return residual flows. This can be beneficial in enabling more high-quality processing of (part of) the many, relatively small waste streams.
The practical challenges posed by both alternatives to the public administration and the market make it difficult to establish clearly whether a positive impact on the high-quality processing objective can be expected.

2.5 Minimum standard general; accelerated raising of minimum standards

2.5.1 Objectives and the alternatives considered

The minimum standard instrument in LAP3 is the assessment framework for the authorisation and non-authorisation of waste operations. It is a lower limit and defines the minimum amount of processing that can be carried out.

As permitting lower quality than the minimum standard is not permitted, raising a minimum standard – for example from incineration to recycling – is generally only appropriate when there is sufficient capacity to actually recycle the waste stream in question in a quantity that is released in the Netherlands. An increase in the minimum standard also implies the need to update existing permits to the new minimum standard. This makes the minimum standard an excellent tool for giving those lagging behind a push, but less suitable for encouraging frontrunners who already ‘outperform the minimum standard’. Indeed, if a more high-quality form of processing is more expensive than processing under the minimum standard, the fact that the competitor remains authorised to work under the minimum standard may actually work against the front runners. This policy issue examines whether the instrument can be used as a minimum standard as an incentive.

The focus of this topic is mainly on waste streams for which landfill/incineration is now considered a minimum standard, and where it is already technically possible to increase to recycling. It is also possible to include a more high-quality form of recycling for a waste stream for which a low-grade form of recycling is now the minimum standard.

Various streams have been considered, which may be relevant: household and business residual waste, process-dependent industrial waste, paper and cardboard, textiles, carpet, bio-waste, GFE, swill, green waste, plastics, tapes, other rubber, fibre cables, water sewage sludge, waste incinerator bottom ash, residues from energy extraction from biomass, GBSA, aerated concrete, roof waste, wood, asbestos-containing material, WEEE, solar panels and EPS. In addition, the expert team provided some examples of materials that could be potentially accelerated by the measure, such as PMD, diapers and VGF.
There are two alternatives to this topic, where a more distinctive use of measures is made in combination with an increase in the minimum standard. Both alternatives have the same purpose, and only the form of implementation (how the objectives can be achieved) is different. The alternatives are:

- IV.b1: raising the minimum standard for new initiatives in combination with full load statements.
- IV.b2: raising the minimum standard for new initiatives in combination with pricing.

These alternatives include a reassessment of minimum standards that currently allow incineration. This will assess whether a form of recycling can already be applied as a minimum standard specifically for new initiatives. This may include a time frame for phasing out initiatives that work on the basis of the current minimum standard. It is important that waste processing companies that are already working under the new minimum standard receive a sufficient supply. The acceleration of the raising may involve both increasing the minimum standard to a higher level in the waste hierarchy and raising it within a step in the waste hierarchy. However, the focus of this study is on flows involving an increase in incineration to recycling.

2.5.2 Summary of the assessment

The effects of the alternatives are described in Section 4, 'Minimum standard general; raising minimum standards more rapidly'. Table 2.5 below gives an overview of this assessment.

In principle, the alternatives are not different in terms of target achievement and environmental effects. For both alternatives, the assessment for the target range is positive, but greater use of waste stream treatment techniques will require more energy and emit more greenhouse gases. The second-order impacts have not been taken into account in this assessment. These (positive) effects are related to the reduction in the use of primary raw materials and thus also to the reduction in the effects of mineral extraction, transport and processing.

The distinction between the alternatives is achievable. For both alternatives, it is predicted that the implementation of the measures will be practicable and will enable the market to emerge. However, both alternatives face their challenges. The challenge for alternative IV.b1 is to create a functioning system of full load declarations. At the same time, a dumping ban exists for a number of streams. This increases complexity, as recycling produces a non-combustible residue for a number of streams (where possible, the process of incineration to recycling) and will therefore have to be landfilled. If there is a dumping ban, an exemption will have to be requested from both the recycler and burn.

These are additional actions that complicate the process. A further strategy would whether priority can be given to these cases in the differentiated rates system in the case of burners is an addition to the recycling process compared to full-load flows, which are still an option for recovery by incineration.

Alternative IV.b2 is pricing challenging. The introduction of a guide to looking at current processes, and which make them more complex. Implementing a subsidy system to compensate for more expensive processing is even more complex

Table 2.5: Overview of the assessments as it is indirectly driven. In addition, there may be a need to:

	Efficient use of resources	Use primary raw materials	+	+
		Ratio of renewable – non-renewable raw materials in products	+	+
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	+	+
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	+	+
		Share/percentage of substances moving to a lower level in the waste hierarchy	+	+
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	+	+
		Returnability	++	++
		Workability	+	+
	Contribution to landfill/incineration restrictions	Landfill volume per year	0	0
		Amount of incineration per year	+	+
Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents per year)	+	+
	Energy use	Use of fossil fuels	-	-
		Energy use	-	-
	Water use	Water use	-	-
	Nitrogen emissions	NO_x and NH3 emissions	+	+
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	+	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+	+
Realisability	Practicability and enforceability (government)	Legal enforceability	0	--
		Practical enforceability	-	0
		Financial enforceability	0	0
		Indirect and/or long term costs	0	+
	Feasibility and compliance (market)	Practicability practical	0	+
		Compliance with practical	0	0
		Economic feasibility	+	+

the implementation of the rules requires the cooperation of several ministries. Another challenge is possible avoidance behaviour. These points make alternative IV.b2 legally complex and therefore more difficult to implement compared to the baseline situation.

2.6 General minimum standard, distinguishing between forms of recycling

2.6.1 Objectives and the alternatives considered

This policy issue explores the possibility of implementing the already existing possibility of identifying specific forms of recycling as a recycling standard. For this purpose, material streams have been selected that allow multiple forms of recycling. A comparison can then be made to determine the most high-quality form of recycling. This form could potentially be sent to a recycling standard.

For this policy issue, the following alternatives have therefore been considered in addition to the baseline situation (Alternative V.a, the zero alternative):
Q.b: To be sent to a specific form of recycling via the minimum standard.

In contrast to other policy issues, cases have been studied in this area. These cases have been selected from a long list of potential flows. This approach has been selected in such a way that examining these flows in the context of this EIA can give a good idea of the effects of prescribing one specific (high-quality) form of recycling, in the situation where recycling is the minimum standard and there is more than one options for recycling. In addition to feasibility considerations, the following general criteria were considered: Multiple forms of recycling should be available for the waste stream in question. Similarly, those different recycling techniques should lead to significant differences in their contribution to a circular economy. It should be a waste stream of significant scale and associated environmental impacts. This is to look at flows where environmental gains can be made.

Diversity has been chosen to provide a good understanding of possible impacts. There is no uniform treatment method for the different waste streams. Each flow has its own minimum standard and has its own possibilities for increasing the standard. By opting for diversity, the EIA provides the widest possible insight into impacts. It is not appropriate to consider waste streams whose forms of recycling and the choices to be made in them resemble each other.

On the basis of these criteria, the following cases were examined:

- Bituminous roofing waste
- Concrete
- Plastic packaging
- Cotton
- Nappies and incontinence materials
- Wood

2.6.2 Summary of the assessment

No assessment based on the Assessment Framework has been carried out in sub-report 5 'Minimum standard general, distinguishing between forms of recycling'. The cases examined concern very specific cases, with specific effects. The six cases do not allow a generic assessment to be made for the different parts of the assessment framework. However, based on the information from the case analyses, the overall expected impact on the higher level of measures was identified. The results are presented in Table 2.6 below.

Table 2.6: Assessment of alternative V.b

Circularity target range	+
Landfill and incineration target range	+
Environmental impact	0
Realisability	0

In general, prescribing a specific processing method offers good opportunities to increase the degree of recycling. Methods may also be selected based on those resulting in multiple use. In the circularity target range, this alternative scores positively (+).

However, based on the analyses of the six waste streams examined, a number of comments can also be made. Each processing method sets its requirements for input, and generates a specific output. With regard to the input, for waste streams that are diversified (consisting of several sub-streams, such as plastics), a particular processing method can only process a specific sub-stream. In such cases, several processing methods may complement each other. As each processing method also has its specific output, it should be considered for each waste stream whether prescribing a processing method also leads to an output for which a consumer market is available. Again, there may be a preference for having several complementary processing methods.
Finally, prescribing a processing method may also temporarily reduce the innovative power of the sector. This reduces incentives for developments leading to higher levels of recycling or improved secondary products. This will eventually have an impact on circularity targets.

The waste streams examined are too diverse to identify concrete impacts for landfilling and incineration. In general, however, it can be said that prescribing a processing method improves the degree of recycling, the quality of the secondary product and/or the degree of re-use. In general, the conclusion is that the level of landfilling and incineration decreases. Therefore, this alternative scores positively in the topic of landfilling and incineration (+).

Similarly, for environmental effects, the waste streams and processing techniques examined are too specific to determine overall effects for the environment.

However, in general terms, where processing methods are prescribed which lead to an improvement in the quality of the secondary product and/or increase the degree of re-use, this may have positive effects on the environment. This is because it makes it possible to avoid the use of primary raw materials and to avoid high amounts of water use and CO_2 emissions in the production of new products when reused.

In addition, for processing methods with comparable results in the target range and feasibility, this alternative offers the option of prescribing the most favourable environmental impacts. For example, in the processing of wood, the processing into pallets leads to greater savings in CO_2 emissions compared to processing into particle board. However, it should be noted that environmental impacts of processing methods may evolve over time, for example, through changes in supply or changes elsewhere in the chain. For the Wood example, the environmental impacts in the LCA are mainly determined by the material saving the secondary product. In the case of full-scale savings, this scores are much better than in the case of savings from wood. In the concrete example, the use of granules in foundations alone scores better than as aggregates by cutting sand cement into foundations. Sand cement is a high MKI in cement production. This could improve on innovations in cement.

The choice of a processing method is not primarily determined on the basis of environmental effects considerations. In addition, it is difficult to identify concrete effects based on the cases described. Therefore, overall, the impact on the environment of this alternative is assessed as neutral.
(0).
Some recycling methods rely heavily on accurate input. Some methods require a very pure mono-flow as an input. This is also linked to the collection. In particular, there is considerable gain in terms of higher-quality recycling. In order to ensure the feasibility of a prescribed processing method, this will have to be accompanied by improving the collection, separation and sorting process. Examples are nappies and incontinence materials, with processing highly dependent on the collection method, and plastics with multiple sub-streams with very different possibilities depending on the type of plastic, composition and interfering substances.
Another possible effect of this alternative is that requiring a recycling standard leads to a stand-still in terms of innovation in new recycling techniques in the Netherlands. Where only one form of recycling is allowed, there is no incentive to develop better forms of recycling. Thus, the choice of the recycling standard will only be logical if it is very clear that the existing recycling method is the

best possible method and that it is unlikely that a better method can be developed. This is very difficult to determine because future innovations cannot be predicted. If there are nevertheless developments in the recycling of the substance concerned abroad, the Netherlands should be able to anticipate this in time in order not to catch up with technology. However, this poses the risk that processors will heavily direct recycling by default and will not be able to switch to it if this happens too quickly.

One point of attention when prescribing a processing method is that it indirectly guides the supply of secondary products, as certain processing methods also produce specific outputs. This may lead to an oversupply of certain secondary substances. It is important to have a clear image of the potential market for these cases.

For some streams examined (such as plastics, wood and nappies/incontinence materials), the recommendation is to increase the minimum standard to recycling. Prescribing a specific processing method has no added value for these flows. Feasibility is based on the above considerations. Overall, there are no issues that affect feasibility or clear benefits. The feasibility assessment is therefore deemed to be neutral (0).

2.7 Specific minimum standards in sector plans: incineration vs recycling and landfill

2.7.1 Objectives and the alternatives considered

The LAP defines incineration as a minimum standard for a number of cases. This includes residual household waste (sector plan 1), residual business waste (sector plan 2), parts of waste from public spaces (sector plan 9), shredder waste (sector plan 27) and construction and demolition waste (sector plan 28). The fact that incineration is the minimum standard for these waste streams means that there is a restriction on alternative forms of processing. They are not allowed if this leads to the deposition of residues/partial fractions. The reason for this long-standing policy is to prevent the removal of a relatively small amount of combustible material from this waste stream, with a considerable remaining portion to be deposited. Full combustion with energy recovery is preferred.

With a growing focus on the circular economy, the need to continue with the ban on landfilling in a sufficiently rigid manner from the minimum standards has been questioned. More processing options might be offered, allowing bulk disposal of the waste for recycling and a small inert area for landfilling. This policy choice, however, requires a certain objective justification to be provided when a certain amount of landfill is acceptable.

The following alternatives have been explored for this topic:

- VI.a The zero alternative (the reference situation)
- VI.b. The minimum standard for the above-mentioned waste streams provides a flow-specific flow of material that is limited to maximum landfill over the whole chain if the rest of the waste is (largely) treated in a higher-quality manner than incineration.
- VI.c. For the above waste streams, the minimum standard specifies the same percentage, which may be dumped as a maximum, along the entire chain for any recycling-oriented processing.
- VI.d. The request is sent by means of fares. Three different forms of implementation were examined:
- VI.d1 Steering with landfill tariffs via the Wbm tax
- VI.d2 Steering with low VAT on secondary raw materials
- VI.d3 Steering by additional burden on primary raw materials
- VI.e. Sorting process requirements
- VI.f. Combination of alternatives VI.d and VI.e (not included in the assessment table).

2.7.2 Summary of the assessment

A comprehensive overview of the assessments of alternatives is presented in Table 2.7.

As the impacts of this policy issue are very similar for each topic, an overarching view is given below. A brief discussion of the alternatives is then given.

Table 2.7: Alternatives assessments

	Efficient use of resources	Ratio of primary raw material – secondary material in products	+	+	+	+	+	+
		Ratio of renewable – non-renewable raw materials in products	0	0	0	0	0	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	++	+	++	++	++	++
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	0	0	0	0	0	0
		Share/percentage of substances moving to a lower level in the waste hierarchy	0	0	0	-	-	-
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	0	0	0	0	0	+
		Returnability	0	0	0	0	0	+
		Workability	0	0	0	0	0	+
	Contribution to landfill/incineration restrictions	Landfill volume per year	0	0	0	-	-	-
		Amount of incineration per year	++	++	++	++	++	++
Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents per year)	+	+	+	+	+	+
	Energy use	Use of fossil fuels	0	0	0	0	0	0
		Energy use	0	0	0	0	0	0
	Water use	Water use	0	0	0	0	0	0
	Nitrogen emissions	Nox and NH3 emissions	+	+	+	+	+	+
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	+	+	+	+	+	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+	+	+	+	+	+
Realisability	Feasibility and enforceability (government)	Legal enforceability	0	0	-	--	--	0
		Practical enforceability	-	0	-	-	-	-
		Financial enforceability	0	0	0	-	-	0
		Indirect and/or long term costs	0	0	0	+	-	0
	Feasibility and compliance (market)	Practicability practical	0	0	0	0	0	0
		Compliance with practical	0	0	0	0	0	0
		Economic feasibility	0	0	0	+	-	0

Circularity and landfill/incineration target range

In general, for all alternatives, it may be observed that the proportion of waste streams treated at a higher level may increase. In addition, the share of waste to be incinerated is decreasing and the volume of landfilling in the Netherlands is increasing to a limited extent.

Environmental impact

In general, all alternatives lead to the same environmental impacts. A higher focus on waste separation, cleaning and recycling achieves lower input from primary raw materials. This also extends the length of materials in the chain. However, this requires an extension of separation and recycling processes. In all alternatives, the diversified process (from incineration to a process with separation, recycling, incineration and landfill) increases transport by collecting and distributing materials. All these changes have an impact on greenhouse gas emissions. Shifting from incineration to recycling generates a net gain in CO2 emissions. The reduction in CO2 emissions resulting from, inter alia, the incineration of waste is offset by more and more intensive processing processes and transport. In addition, reduced use of primary raw materials results in reduced CO2 emissions from the extraction and processing of primary raw materials (with a significant part of this effect taking up abroad).

In principle, the effects on greenhouse gases are also valid for nitrogen (NOx and NH3) emissions. Reduced waste incineration reduces nitrogen emissions. On the other hand, more and more intensive processing techniques and transport lead to an increase in nitrogen emissions, but this is outweighed by the reduced emissions from combustion.

More intensive processing and transport operations require more use of fossil fuels. On the other hand, the reduced use of primary raw materials (and therefore less use in the extraction, transport and processing of primary raw materials) leads to lower use of fossil fuels. However, the use of energy and water is increasing in all alternatives. There is a shift from energy-poor processing (incineration) to energy-intensive processing (recycling).

The alternatives reduce combustion and thus the risks to humans and the environment from the spread of harmful substances. Although landfill in the Netherlands is increasing very slightly, the impact on people and the environment is positive due to the decline in incineration.

Realisability

These alternatives give the processor the choice to continue doing what they are doing now, or to establish more extensive processes and innovate in order to increase separation and recycling. This is because for these alternatives, dumping is only possible if it is demonstrated that another part of the waste has been processed in a better quality way (with the possibility of partial incineration). The current working method is a proven business case for the processor in a workable and well-known system. These alternatives provide the processor with a situation where uncertainties could lead to a business case.
The incentive to increase recycling – which is the underlying goal in these alternatives – is likely to be of a financial nature for the market, despite the likely positive sustainability ambitions of the processors. This seems most effective if this incentive is channelled through landfill prices. Setting percentages of maximum deposit fractions may be less effective in practice.
They will ask if any additional effort to increase separation and processing on balance results in something. This is balanced against the current positive business case. The business case is largely determined by the cost of additional processing, the revenue of the separated and recycled fraction and the cost of depositing the residual fraction. In the case of waste to be incinerated, the costs to be paid to the incineration plant will still be relevant.
While the business case is primarily determined by the cost of an additional processing step, allowing a limited amount of deposits may contribute to a better business case for processors. More landfill possibilities give the processor more room for manoeuvre to optimally divide a given waste stream into sub-streams of incineration (energy-containing materials but low recycling options), recycling (materials that generate something and market for them) and landfilling (non-combustible, non-recyclable). Combustible materials (such as plastics and wood) are both interesting for waste incinerators, because of their calorific value (as they produce high energy and low residue levels, mostly plastics), and for more recycling (with even higher or lower quality forms within them).

For non-combustible materials (sand, gravel, metals, glass), this competition plays no role. For these materials (such as metals and glass), recycling is more self-evident, as it can be either sent to landfill or recycled. The material as part of a larger, more mixed flow through processing in an incineration plant does not generate anything but does generate costs. Alternative VI.e, which involves more sorting, is even more difficult to incinerate. As a result, a business case with more processing is becoming more realistic.

Consideration of alternatives

The above shows that the alternatives are not sufficiently distinctive in the areas of target achievement, landfill and incineration, and environmental effects. Positive impacts are expected on these topics. In addition, the analysis shows that in the alternatives, where guidance is provided by setting percentages of maximum deposition rates, may be less effective in practice due to the lack of a real incentive for further processing.

Price-driven alternatives score less well on feasibility, with the variant focusing on landfill prices appearing to be the most practicable. Variants involving the adaptation of VAT on primary or secondary raw materials are too many feet in the Earth and can also be very complex in the international context.

Overall, the best scores achieved are in the alternative, which focuses on more intensive sorting processes. In this alternative, if the processors are given a further push by making landfill less attractive at more expensive prices, an even greater effectiveness can be achieved. As the assessment of feasibility shows, a combination of the two measures will be feasible in one alternative for the public administration and the market.

3. Overarching findings and recommendations

3.1 Conclusions by policy issue

The underlying essence of all the policy issues examined concerns the following:

- Keeping the useful materials in the chain
- Removing and maintaining unwanted substances / contaminants from the chain

The main findings for each policy issue are summarised below.

Immobilisates

With the aim of cleaning, a large proportion of the contaminants present in the respective waste streams are removed from the cycle. Cleaning leads to clean materials, which can be applied freely as non-formed building materials. The amount of immobilisate is decreasing significantly. This has no negative effects on the living environment. The extraction of pollutants from the cycle has a positive impact on risks to people and the environment. This risk decreases when combined with capturing those flows that are still being recorded, and it reduces the risks posed by immobilising them in a more limited way.

However, implementation issues are highlighted. The economic feasibility is highly dependent on the market for the secondary material produced. This depends on the difference in the price of cleaned material in relation to primary raw materials and, in this case, also on the image of the secondary materials. Cleaning is relatively expensive, leading to secondary raw materials that are more expensive than the primary raw materials they can replace. This is especially because the primary raw material in question is sand. This is a very cheap primary raw material. Furthermore, the image of cleaned products is that in the past cases have shown difficulties in using cleaned products.

Use as a flux

With the aim of cleaning, a large proportion of the contaminants present in the respective waste streams are removed from the cycle. This has no negative effects on the living environment. The extraction of pollutants from the cycle has a positive impact on risks to people and the environment. It should be noted, however, that a large part of the flows, which are now used as aggregates, are difficult to avoid cleaning.

However, the alternatives do not reduce the use of concrete and therefore the negative effects of concrete use. This risk is reduced when combined with keeping a picture of those flows that are still applied as a aggregate, and reduces the risks posed by the use of the aggregate on a more limited scale.

This measure raises issues of practicability. The economic feasibility is highly dependent on the market for the secondary material produced. This depends on the difference in the price of cleaned material in relation to primary raw materials and, in this case, also on the image of the secondary materials. Cleaning is relatively expensive, leading to secondary raw materials that are more expensive than the primary raw materials they can replace. This is especially because the primary raw material in question is mainly sand, which is a very cheap primary raw material. Furthermore, the image of cleaned products is not good.

Health care substances

It follows from the analysis that the combination of setting minimum standards for care waste reduces the risk to human health and the environment, while also reducing the circular economy's target achievement. This implies that the introduction of a minimum standard for a substance-waste-substance combination should be preceded by an analysis (LCA) analysing its advantages and disadvantages.

These conclusions are in fact well in line with the policy intention of requiring a treatment based on a balance between target-range and effects for certain health-care waste combinations (including a lower-bound concentration).

In the reference situation, care substances that are not SVHCs receive no attention (with the exception of diapers). In theory, the environmental impact of paying attention to certain substances of concern (the policy formulation) could never be negative, as regards the risk of spreading such substances into the environment. However, in addition to these environmental impacts, other aspects play a role, which, as the assessment also shows, can be negative. This can make trade-offs difficult.

Import/Export
When requiring that, when waste is transported across the border, the residue to be landfilled be returned to the country of origin, both alternatives examined seem to make a relatively small contribution to the ambition of reducing the amount of material to be landfilled in the Netherlands and the self-sufficiency objective. As a result, less waste that is awaiting incineration may be imported. This may result in a decrease in the amount of immobilisates or in the application of combustion residues. For the Netherlands, this means that more contaminants are kept out of the cycle.
As an alternative solution, it has been proposed to ban imports or exports if more than a certain percentage of the waste stream in question will be landfilled. The question is whether this is legally possible. On the one hand, this alternative is clear and relatively easy to implement (e.g. no checks are required or residual flows are actually being returned), but on the other hand, the proportion that will be paid in must be clear for each party. This may come up against practical problems. In the waste processing sector, such import bans may be unfavourable, due to the reduced flexibility and scope to optimise the use of the capacity of the processing plant.

Minimum standard general; accelerated raising of minimum standards
Accelerated raising of minimum standards has a positive impact on the retention of useful materials in the chain. The challenge will be in the flanking measures, working with full load statements and/or sending tariffs. This alternative will require consideration of the measures that lead to a viable alternative for the public authorities. For the market, at the time of a positive business case, there will be few practical concerns.

Minimum standard general, distinguishing between forms of recycling
Prescribing a specific form of recycling has a positive impact on the retention of the useful materials in the chain. However, in many cases this also requires a commitment to improve the collection and sorting processes. However, an unintended side effect is that the instrument may lead to a standstill in innovation of new recycling techniques in the Netherlands. Therefore, for each specific stream, the added value of this tool versus increasing the minimum standard of recycling will have to be assessed widely (i.e. all forms of recycling are permitted).

Specific minimum standards in sector plans: incineration vs recycling and landfill
Increasing landfill capacity has positive effects on the retention of useful materials in the chain. The alternatives studied are not sufficiently distinctive in the areas of target achievement, landfilling and incineration, and environmental effects. Positive impacts are expected on these topics.
In practice, steering by setting percentages of maximum landfilling fractions may be less effective due to the lack of a real incentive for further processing.
When dealing with tariffs, there are complexities relating to realisability. The variant focused on landfill prices appears to be the most practicable. Variants involving the adjustment of VAT on primary raw materials or secondary raw materials are difficult to implement in terms of regulations and may be very complex in the international context.

3.2 Scope of this EIA in relation to the scope of the CMP

3.1.1 General findings and recommendations

An EIA for policy alternatives is strongly linked to an ex ante policy study on how (and why) policy ambitions can translate into an environment where cost-benefit considerations and business cases significantly determine what is and what is not happening.

The assessments of the alternatives show that the most distinctive features of the topic are realisability. The assessment of the target range and impact on landfilling/incineration was based mainly on the theoretical intention of the alternative. This means the functioning of the alternative, how it was designed to be effective in theory. As these alternatives were designed correctly to minimise the value of useful materials in the chain and to extract unwanted substances and/or contaminants from the chain, all alternatives score generally positive on these topics.

Assessment of environmental effects shows low distinctive character in the trade-offs. The analysis also shows that there is no alternative with a substantial negative impact on the living environment. On the other hand, the feasibility assessment shows distinctive effects and provides the most insight into the policy development to be determined. The scope for steering this theme is very much a determining factor. Essentially, two tools are in charge: steering with regulations (mainly based on sector plans) and price control. Price control is a factor in the recycling issues. The analysis shows that the implementation of this measure is a complex task, especially for the administration. Regulation is feasible for the administration and, provided that no obligations are imposed, it will be feasible for economic operators to have a positive business case.

3.1.2 In response to this EIA

Practical assessments

This EIA was prepared in consultation with experts from the sector[114]. Alternatives and possible effects have been discussed with experts. These interviews revealed that while the alternatives are clear in broad terms, there are many questions about the details. This does not always make it clear what the impact will actually be. This is also due to the fact that this is a plan EIA, where less detail can be found on its precise impact, as opposed to a project EIA where it does.

These conversations also show that the market certainly has ambitions to move further towards a circular economy. There is a need for sound government instruments to guide this. At the same time, there is a fear of instruments which may have a negative impact on the ground (e.g. due to complex practicality) and may therefore lead to undesirable effects. These have been described as risks in the impact assessments of the topic ‘feasibility’, but not assessed as such.

Environmental impact not quantified

The assessment on the topic of ‘environmental impacts’ was carried out at a relatively high level of abstraction. The starting point is a qualitative assessment. One reason for this is that little concrete quantitative information is available within the scope of this EIA. Where quantitative information is available, it has been used to strengthen the evidence base. However, the main conclusion is that there was no alternative that would lead to substantial negative impacts on the living environment and would therefore not be feasible.

Relations with other policy fields

The policy issues examined are related to other policy fields. For example, there are economic policy relationships with scarce and essential components (for example for semiconductors, electric motors, batteries, etc.). These are now (partly) considered as contaminants, but also have (strategic) economic value. There are also relationships with construction regulations, which can guide the use of secondary raw materials in construction and infrastructure. Other regulations to be followed are, for example, the current Bssa, the Environment Act, REACH and the Waste Framework Directive (WFD). This requires coordination between the policy issues in this EIA and other policy fields.

Attention to the whole chain

Finally, impacts and opportunities in the waste stage (opportunities and limitations) are strongly influenced by prior stages in the chain. The way in which the product is designed, produced, used and collected may influence the

114 See Annex 1.

possibilities for processing the waste. However, these phases are not part of the scope of this EIA. This includes the quality of secondary materials and therefore their applicability in subsequent recycling cycles. However, these phases may (co-)determine the chances of success of alternatives. In order to really address circularity (its impact/potential), the whole chain needs to be addressed.

3.3 Knowledge and information gaps

A mandatory part of an EIA is to describe gaps in knowledge and information that may affect assessments and conclusions.

The nature and level of abstraction of the policy issues addressed in this EIA and the alternatives considered inevitably lead to uncertainties in the assessments and conclusions. For this reason, some analyses and assessments have also been done in the form of cases. However, as indicated above, these uncertainties do not call into question the conclusions.

A major cause of uncertainty about the degree to which targets are met and impacts occur is the dependence of economic operators that actually handle waste. These market parties make their own assessments at the strategic (investment and investment) level as well as at the operational, daily level (if the assessment is subject to discretion: what are the waste streams involved?). These considerations ultimately determine to a large extent what (intended) policies produce in terms of target achievement and environmental impact.

A second aspect of uncertainty is that, while there is a great deal of quantitative information on the waste streams, it is not always obvious that the recording of the waste streams (on which this quantitative information is based) is done properly. No analysis of this aspect (size?) and of the causes of incorrect registrations has been carried out under this EIA.

3.4 Monitoring and evaluation

In addition to identifying gaps in knowledge and information, an EIA should make proposals for monitoring and evaluation. It is envisaged that the way in which the monitoring and evaluation will be carried out will also be taken into account in or when deciding on the basis of the EIA (i.e. determining the CMP). Given the strategic nature of the proposed decision, it is also important that monitoring and evaluation can be adjusted as necessary. This may be desirable if the target achievement is not achieved and/or if (environmental) effects are shown to be too negative.

Waste streams are already subject to very high levels of registration and reporting. This will, of course, remain necessary, with information on the composition and concentrations of contaminants (substances of concern) in addition to quantities. The purpose of monitoring and evaluation is to provide information and insights for reinforcing the policy, where and when required, as well as to gather information that can be used in an EIA for possible future policies.

Monitoring and evaluation may also be important for strengthening the foundations of future policies. This EIA describes that the actual effects of proposed policies depend to a greater or lesser extent on what economic operators active in the waste sector actually do. Considerations relevant to the strategic, tactical and operational assessments made by economic operators and their relative importance are relevant to the development of new policies. Much is already known about this, but it is recommended that this be taken into account in the monitoring exercise.

This EIA is part of the CMP, but the intended policy addressed in this EIA is focused on waste. On a number of sub-topics, it has been observed that target achievement and effects of the policy options under consideration are more or less dependent on the preparatory phase: what happens in the chain before a substance or product becomes a waste? This preliminary project is (currently) outside the scope of the CMP and this EIA. Monitoring and evaluation can help to better understand what can be done during the preparatory phase to adjust the quantity and composition of waste streams in a way that facilitates their processing. What are any barriers (e.g. in terms of composition) and what recommendations for the preliminary phase (from production to collection) could this lead to? This may also contribute to insights that can be used in the next policy reviews.

Annex 1: Experts consulted

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- Esther van den Beech TNO

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Circular Materials EIA plan

Part report 1: Immobilisation and use as a generator

Antea Group

Understanding today.
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revision Final
14 June 2024

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Circular Materials Plan EIA

Partial report 1: immobilisation and use as an additive

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1. Introduction

1.1 Circular Materials Plan 1

The current National Waste Management Plan (LAP3) expires at the end of 2025 and will therefore be revised. This revision is accompanied by a shift in emphasis. The LAP focused on good waste management, while the (first) Circular Materials Plan (CMP1) increases the ambition to retain raw materials for as long and as long as possible and to reduce the use of primary raw materials as much as possible. The CMP is therefore more in line with the transition towards a circular economy than the LAP3.

The environmental impact assessment procedure and the environmental impact assessment (EIA), as a product, provide an objective picture of the environmental impacts of a number of policy choices. The EIA is a separate product from the CMP. The EIA provides information enabling the CMP policy choices to be made.

Six policy options examined their environmental impacts and included them in six separate sub-reports. The overall environmental impact assessment (EIA) has been prepared on the basis of these sub-reports.

The study of the functioning of the alternatives and their possible impact involved, for example, drawing on the knowledge and experience of a number of experts in the form of an expert team consulted several times. Where specific information from (members of) the expert team has been used, this is explicitly mentioned. The use of the expert team’s input has been further detailed if necessary.

The content of this report is the responsibility of the authors.

This partial report covers the topics of immobilisation and the use of secondary materials as aggregates of moulded building materials.

1.2 Immobilisation and/or use of secondary materials in moulded building materials within the Circular Economy

In a circular economy, materials are re-used as much as possible to form other materials or products after use. This also applies to building materials. By treating materials that do not meet the requirements for building materials – such as certain bottom ash, furnace slag or contaminated soil – with a binder (immobilising) or as an aggregate in a shaped building material, they can still meet the requirements for building materials and be recovered. The immobilisation process leads to a formed building material in accordance with the Soil Quality Decree (Bbk). This material is referred to as ‘immobilisate’.

Some concepts

Building material: material in which the total combined content of silicon, calcium or aluminium exceeds 10 % by weight of that material, excluding flat glass, metallic aluminium, soil or dredged material, intended for use (Soil Quality Decree, Article 1)

Formed building material: a building material with a volume per smallest unit of at least 50 cm3, which has durable dimensional stability under normal conditions (Soil Quality Decree, Article 1)

Non-formed construction material: construction material of which the smallest unit has a volume of less than 50 cm^3 or construction materials which are not durable in shape under normal conditions. (Soil Quality Decree, Article 1).
The market for non-moulded building materials is not the same as for moulded building materials. Cementitious paving is required for various applications, such as foundations for solar parks in landfills.

Immobilisate: moulded building materials that are the product of a method of processing which modifies the chemical or physical properties of a waste material for the primary purpose of identifying contaminants present therein (Living Environment Law (Activities) Decree, Article 4.1257)

In cases where the material used contains contaminants, they end up in the immobilisate or in the shaped building material. As a result, there are two risks:

1. The first risk is that contamination occurs during the use phase, for example through leaching, erosion or wear. This relates in particular to the way in which the immobilsate is built and operated. The Soil Quality Decree only ensures that the standard is complied with at the time of application, but does not guarantee anything for the rest of the life stage (a limited leaching is also permitted).
2. The second risk is that in (subsequent) recycling applications, after the use phase of the immobilisate or the shaped building material, contaminants go unnoticed through the chain or enter the environment.

In a letter to the House of Representatives, the State Secretary for Infrastructure and Water Management indicated that the contribution of waste cleaning and immobilisation to the transition to a circular economy should be analysed. The opportunities and environmental risks associated with the use of AVI bottom ash in concrete are also important in this analysis[115]. This additional focus on bottom ash comes from the letter from the State Secretary for Infrastructure and Water Management to the House of Representatives setting out the vision of sustainable land reuse[116]. In preparation for this analysis, the state of immobilisation in the Netherlands has been identified (type of waste, quantities, techniques, actors, applications, laws and regulations, etc.)[117]. The fact-finding study shows that, in cases of immobilisation and the replacement of primary raw materials as aggregates in concrete, waste containing contaminants is processed and as a result the products do not meet legal compositional and/or leaching requirements for use as building materials. As a result, impurities originate from the starting material in the immobilisate or the formed building material and remain in the cycle. This leads to uncertainty as to how the immobilisate or the engineered building material will behave in the longer term in the applications concerned. Furthermore, it is possible that, during a subsequent use and processing cycle, it is not known that a contaminated raw material has been used in the past in a material (to be reprocessed at that time). Therefore, there is a risk of undetected dispersion of contaminants into the environment and a potential for contamination of the quality of raw materials of the future. In light of the environmental principles of precaution and preventive action, the EIA therefore looks at a number of alternatives to limit immobilisation or to ensure that the risks of unmarked contamination of the material chain are/remain mitigated.[118]

1.3 Difference between immobilisation and use as aggregates

Immobilisation and use of a substance as an aggregate are similar in process. In both cases, it identifies contaminants that, despite the contaminants, can be usefully applied. However, the two processes are also different:

1. Immobilisation is intended to encapsulate contaminants or by other means to ensure that contaminants become inert and cannot leach and spread in the environment. This can be done in different ways: thermal immobilisation (waste is vitrified), chemical fixation (binding to contaminants by adding substances), immobilisation with organic binders (especially in asphalt where the bitumen form an impermeable layer, however, is no longer permitted when applied as a blinding layer) and immobilisation with inorganic binders (especially cement which forms an impermeable layer)[119].
2. Contaminants are also recorded when applied as aggregates. A (contaminated) aggregate is often cement-bound, but one has a specific function within the particular application. An aggregate is used to make

115 Reaction note on views –NRD for Environmental Impact Assessment for the Circular Materials Plan

116 Vision on the sustainable reuse of land (letter from State Secretary IenW to the House of Representatives, 11 December 2018, IENW/BSK-2018/272405)

117 Fact-finding study on immobilisation, Royal Haskoning DHV, 2021

118Royal Haskoning DHV, 2021

119Royal Haskoning DHV, 2021

concrete, for example. Concrete normally consists of an aggregate (usually gravel and sand), a binder (usually cement), water, and filling and auxiliary materials. The aggregate is often about 75% of the concrete volume and is important

when determining the characteristics of the concrete. These include mechanical properties (compressive strength and deformation behaviour) and physical properties (density, thermal behaviour, wear resistance, texture)[120].

Because of this distinction, this topic is divided into two sub-topics, iA and iB, with their own, partly similar, policy alternatives. The EIA and this report have addressed these topics separately.

1.4 Synopsis

Chapter 2 describes the assessment framework and how the impacts on alternatives are presented. For immobilisation, Chapter 3 sets out the baseline situation and Chapter 4 describes the alternatives and their assessment. For aggregates, the reference situation is in Chapter 5 and the alternatives and their assessment in Chapter 6. Finally, Chapter 7 presents a comprehensive consideration of alternatives to immobilisation and additives.

120 Aggregates (betonlexicon.nl)

2. Assessment framework

2.1 Introduction and overview

The assessment framework is set out in the Note on the scope and level of detail (NRD) for this EIA. Following the input and advice received on the ETD, some adjustments have been made to the assessment framework and have been incorporated in the final ETD[121].

In the context of the preparation of this EIA, the evaluation framework was further elaborated and some adjustments were made, also following the first finger exercises with the impact assessment and comments made in the expert meetings.

The main changes made to the assessment framework in the NRD are:
1. A level of aggregation has been added and the aspects and sub-targets are below that level. This leads to a two-topic format focusing on objectives and target ranges, respectively on circularity target and landfill and incineration target range, on environmental impacts and on feasibility.
2. In the target achievement topics, the second level of aggregation consists of sub-targets and in the topics of environmental impact and feasibility the second level of aggregation consists of aspects;
3. Some aspects are formulated in a slightly different way than in the NRD; for example, in the case of raw materials, all raw materials (and not only renewable or recyclable) are considered, with the ratio of renewable and non-renewable attention;
4. The feasibility theme has been divided into feasibility (involving the government) and feasibility (how market players can deal with the measures included in the alternatives); this difference between the government and the market is important in making the assessments of how the alternatives will work in practice. This is because businesses operating in the market play an entirely different role to that of public authorities. This is because operators make daily choices about the way materials are processed (cleaning or immobilisation), but also make choices about investments in treatment and processing capacity.
5. Some aspects have been added, namely energy use, water use and consumer market.

This leads to the assessment framework as shown in Table 2.1 and Table 2.2. This classification, comprising four topics and a total of 11 sub-objectives and aspects, was also used in the summary assessments of the alternatives. A higher number of indicators have been identified under the sub-targets and aspects. These are explained in section 2.2.

Table 2.1: Target Scope Assessment Framework

	Efficient use of resources
	Stimulating high-quality waste processing
	Impact on the quality of secondary materials, including in a possible next cycle of recycling
	Contribution to reducing landfilling and incineration

121 Reaction Note on Views – NRD for Environmental Impact Assessment for the Circular Materials Plan; Ministry of Infrastructure and Water Management, January 2023

Table 2.2: Impact assessment framework

Environmental impact	Greenhouse gas emissions
	Energy use
	Water use
	Nitrogen emissions
	Risks to man and the environment from spreading harmful substances
Realisability	Practicability and enforceability (government)
	Feasibility and compliance (market)

The NRD indicates that when assessing the alternatives (per component), specific effects or concerns are manifest that are relevant for the assessment, but are not included in the assessment framework. Where relevant, the assessment framework may be supplemented by specific indicators.

Rating scale

A five-point scale (Table 2.3) is used to assess target achievement and impact. The assessment is always relative to the baseline situation, also referred to in this report as the base case.

In principle, the assessment is qualitative. Where possible, it is supported by (semi)quantitative evidence.

Table 2.3: Rating scale

	betekenis
++	zeker en substantieel positief effect
+	vermoedelijk en/of beperkt positief effect
0	neutraal effect
-	vermoedelijk en/of beperkt negatief effect
--	zeker en substantieel negatief effect

2.2 Further explanation of the assessment framework

Circularity target range

The indicators for this topic are presented in the diagram below (Table 2.4) and briefly explained. The order of the sub-targets and indicators is not indicative of the importance or weight. The starting point for the assessment is that, in principle, all indicators are of equal importance. Criteria weighting is applied in the context of further policy-making within the CMP. This part of the assessment framework relates to objectives and sub-objectives and has been defined accordingly. The underlying objectives of the policy are essentially to keep (soil) substances in the cycle as much as possible and to remove and retain pollutants from the cycle as much as possible. The latter can be done either by destroying contaminants (by burning or destroying them) or by dumping them in such a way as to prevent, as far as possible, any propagation into the environment, including in the long term.

The target achievement is divided by two dimensions relative to the NRD. The sub-targets for landfill and incineration have been addressed in their own context. Dumping and incineration inevitably result in material disappearing from the cycle. An initial analysis has shown that circularity and landfill/incineration assessments may be contradictory, leading to loss of information when aggregating the assessments to the thematic level.

Table 2.4: Circularity sub-targets and indicators

	Efficient use of resources	Efficient use of primary raw materials	The less use of (primary) raw materials, the better. The rationale behind this is that primary raw materials are finite, and that the extraction and transport of primary raw materials can have significant (negative) environmental impacts.
		Renewable – non-renewable raw material ratio in the cycle	The larger the ratio of renewable – non-renewable raw materials in the cycle, the better.
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	This involves moving up as much as possible: for these indicators, the higher the hierarchy, the better. In scoring this indicator, attention is paid to the potential overlap with other indicators (in particular, ‘primary raw material use’). Due to the relatively gross division of the waste hierarchy, a distinction is also made within the steps
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	
		Share/percentage of substances moving to a lower level in the waste hierarchy	
	Impact on properties of secondary materials, including in any subsequent cycle of recycling	Applicability	If the secondary material is applied. This indicator evaluates whether the qualities of the secondary material are such that it is possible to apply them properly.
		Returnability	At the end of the period of use. This indicator looks at the ‘ease’ that can be achieved at the end of the period of use – after a raw material processing has been employed in the cycle. In order to do so, the qualities of the secondary material concerned must be such that they can be identified and taken back
		Workability	It is also important that the secondary material can be processed responsibly at the end of the period of use.

As part of the assessment framework, the ‘high-quality’ of waste processing is examined. Further specification of the concept of ‘high quality’ is necessary to make this assessment effective. This report is based on the sole consideration of waste and the waste hierarchy is guiding the assessment of quality. This means that reuse (such as collected and reused beer bottles) is not considered. Depending on the efforts needed for reuse and its (environmental) impact, reuse will almost always be more positive than (high-quality) recycling. This also follows from the waste hierarchy.

Within this framework, the focus of this report is on the 'Raw Materials Conservation' aspect. As indicated above, the basis of the waste hierarchy is decisive. Within the same step of the waste hierarchy, this report refers to higher-quality forms of recycling where material is kept in a material or product chain as much as possible and of the highest quality over as many cycles as possible. Landfill and incineration target range

The indicators for this part of the target achievement of dumping and incineration are shown in the table below. The underlying objective for both indicators is to reduce the amount to be landfilled or incinerated.

Table 2.5: Sub-targets and indicators for landfilling and incineration

	Contribution to landfill/incineration restrictions	Landfill volume per year	The less, the better.
		Amount of incineration per year	The less, the better. The impact of substitute fuel was not included.

Environmental impact

To illustrate the environmental impacts of the alternatives, the assessment framework has identified four aspects, see Table 2.6.

Some overlapping indicators are included. For example, CO_2 emissions are related to the use of (fossil) energy sources such as oil, coal and natural gas. However, the individual indicators have been chosen as they do not completely overlap. For example, CO_2 emissions also include sources other than fossil fuels (such as CO_2 released from cement in concrete production, in particular from the cement used); and fossil fuels are also used as raw materials (e.g. in plastics production, see also Figure 2.1).

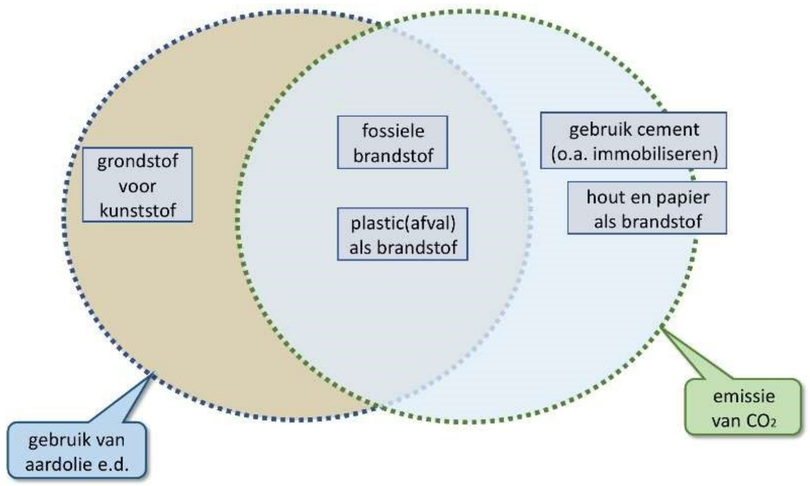

Figure 2.1: Relationship between CO2 emissions and fossil fuel use

For the use of energy, the indicator in question looks (only) at the energy use needed for the alternative in question (compared with the reference situation), for example for transport and for the processing operation in question. In line with the 'trias energetica', the underlying aim is to minimise the use of energy as a result of generating energy (fossil as well as renewable sources) has environmental effects. Moreover, this study did not specifically look at the potential for using non-fossil energy sources (and their impact on emissions).

For nitrogen emissions, it was decided to look at emissions rather than deposition. This has been done because the deposition site is bound, and nitrogen oxides are also relevant from an air quality perspective. The underlying aim is to minimise concentrations in the atmosphere and also to reduce nitrogen deposition in Natura 2000 areas.

The ‘risks to people and the environment’ aspect ultimately means that contaminants (which may be a threat to the ecosystem and human health) are kept out of the cycle as much as possible, and
minimise the spread to the environment. Keeping waste out of the cycle can involve destruction (e.g. by incineration or biological breakdown), controlled storage (in a landfill) or immobilisation of contaminants. The environmental effects of these forms of processing may also differ.

Table 2.6: Environmental impact aspects and indicators

Environmental impact	Greenhouse gas emissions	Emissions (in CO_2 equivalents)	Annual emissions, including from energy use, such as from transport and other processes through the release of CO_2 and other greenhouse gases The aim is to limit it as much as possible. In CO_2 equivalent/year.
	Energy use	Use of fossil fuels	Due to the use of fossil fuels as a raw material and as a source of energy. Minimise the use of fossil fuels
		Energy use	Reducing the use of energy and water is positive in itself (as it also reduces the need for energy generation, water extraction, etc.). The less, the better
	Water use	Water use	
	Nitrogen emissions	NO_x emissions	Emissions instead of deposition
		NH_3 emissions	
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	It looks at the various parts of the chain. These are potential emissions from processing, incineration, landfill or use of materials as building materials. The time scale and the mechanisms by which it can spread are important, namely during secondary use (through leaching, erosion). etc.) at the end of secondary use (crushing, grinding, etc.)
		Contribution to reducing exceedance of standards in soil, water and air quality	Chain of Use, Life Cycle Human health risk assessment (via drinking water, food, atmosphere)

Realisability

For the assessment of alternatives, it is relevant to assess how the alternatives will work in practice. This is referred to as 'feasibility' (Table 2.7). Therefore, the feasibility, enforceability and economic feasibility of the alternatives have been considered. It is important to determine the extent to which the authorities can implement the alternatives and the efforts and costs involved. It is also relevant how the actions envisaged, such as those presented in the alternatives, could be successfully implemented by the companies operating in the market that are required to implement the planned policy in practice. This will also give you an idea of how and to what extent alternatives will work in practice.

Table 2.7: Aspects and indicators realisability

Realisability	Practicability and enforceability (government)	Legal enforceability	It is legally possible; it is legally possible for the authorities to actually take the relevant measures (regulations, etc.).
		Practical enforceability	It assesses the practical feasibility of organising enforcement by the

			public authorities
		Financial enforceability	This relates to the costs of enforcement for the public authorities
		Costs for the public administration, direct and indirect and/or longer-term	For example, costs for damage to the environment and damage to health
	Practicability and compliance (market)	Practicability practical	It is available, has sufficient capacity and can be accessed. This includes opportunities and risks: How does it work in practice for the market?
		Compliance with practical	This will assess whether, in practice, it is possible to meet market compliance conditions
		Financial compliance	Costs for fulfilling market conditions
		Economic feasibility	These are the costs and benefits of the processors operating in the market. Costs are determined by capital charges and operational costs (including charges). The benefits are generated by the sale of secondary (land) materials, energy, subsidies, sales market, etc.)

2.3 Assessment method

To allow the assessment of the impacts of the alternatives, a number of principles have been chosen. These include:

1. Separation of focus, impact and realisability assessments;
2. How to take the effects of substituting the use of materials and energy;
3. Reference situation to be used.

These principles are outlined below.

Impact assessment targets and effects: no adjustment to realisability

The evaluation of the impact of policy measures on the ground is an important consideration in the assessment of alternatives. After all, the final environmental impacts, and the degree to which it contributes to the achievement of the objectives, are the result of the combined ‘technical’ impacts of the policy options (for example, CO_2 emissions from a particular policy option) and the ‘success’ of the policy option in question on the ground. On balance, a policy measure that has a high technical-theoretical positive impact but is not applied in practice (for example because it is not economically feasible) will have little impact. In order to avoid double counting of impacts, but also to be able to make a proper balancing and possibly take additional measures, the approach taken in this EIA is as follows:

1. The evaluation of target achievement and environmental impacts was based on the substantive technical elaboration of the relevant policy option. These include, for example, the composition (level of pollution) of component streams, the use of energy and water in techniques needed for the policy option, and emissions of nitrogen oxides and CO_2. This assessment does not take into account the extent to which the technique in question will actually be deployed. This may mean that the assessment shows a best-case situation, either in part or in full.
2. When assessing the aspects within the topic, it is important to check whether the policy option in question will be implemented in practice and to what extent, in practice, this option will lead to a different use of techniques and processes (compared to the baseline).
3. Assessments for the individual aspects are summarised, followed by a final assessment, which explains and discusses the effects on the environment and realisability, for each alternative and topic covered. These

considerations will explain whether and to what extent the target-range and impact assessments are influenced by the realisability assessments.

4. This approach helps to identify possible dilemmas and follow-up questions for each part, as policy options can be promising in terms of content but are inhibited by realisability issues, and in this case, the potential for greater realisation can be addressed. This can be illustrated in Figure 2.2. The assessment of the impact on the two axes has been done independently.

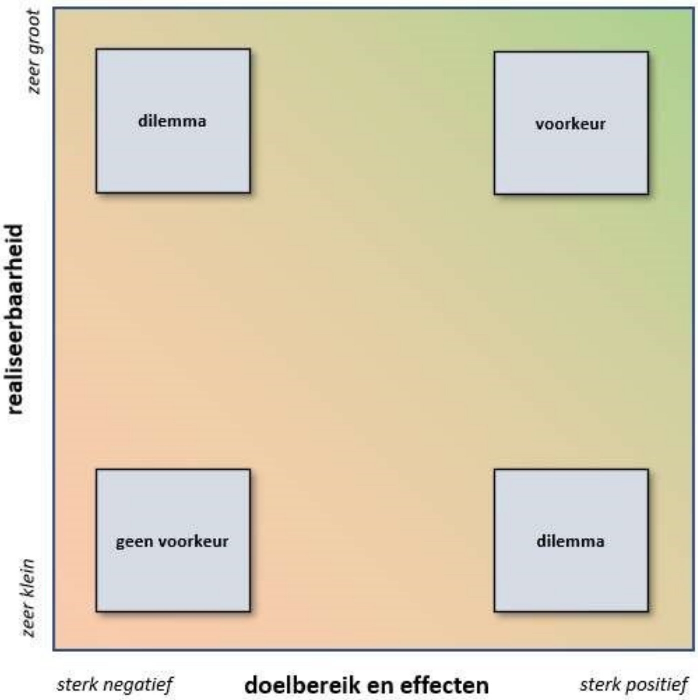

Figure 2.2: The ultimate desirability of alternatives is determined by target achievement and effects (horizontal axis) and feasibility (vertical axis)

Effects of substitution

This study looked at the effects of alternatives to substitution of materials and energy. For example, if the amount of waste to be incinerated decreases (due to a measure), the use of other energy sources (fossil and/or renewable) will increase, and if secondary material use increases, the use of primary material will decrease. When describing the environmental impacts of the alternatives, it has been described (where relevant) whether there may be second order environmental impacts. Where relevant, these have been included in the impact assessment. For example, if an alternative causes less waste to be incinerated or the calorific value of waste to be reduced has been considered as a consequence of the need to use other energy sources.

Reference situation

The effects of the alternatives are described and compared with the baseline situation, also referred to as the base case. The baseline is based on the policies and rules in force, without taking into account any deviations that may occur in practice. No evaluation of current policies and regulations was carried out under this EIA. In this report, we use the term ‘reference situation’.

3. Immobilise reference situation

3.1 Policy and Regulations

The production and use of building materials is currently regulated under the LAP3 and the Soil Quality Decree (Bbk). The LAP3 regulates input for the production of immobilisate and determines which waste may or may not be immobilised. The Soil Quality Decree regulates output, i.e. the requirements for the application of building materials resulting from the immobilisation process.

Based on LAP3, immobilisation is not permitted for a specific number of streams for the purpose of chain return. This concerns asbestos, mercury-containing waste (unless permitted as building material under the Bal and Bbk), arsenic-containing waste and PAH-containing waste. Furthermore, waste resulting from the concentration of pollution can never be immobilised into a building material. This includes the following wastes: residue from extractive cleaning (e.g. from soil, screened sand, stony material or dredgings), filter cake from detoxification, neutralisation and de-watering, residue from the upgrading of waste incinerator bottom ash and exhaust gas cleaning residue[122]. In all other cases, immobilisation and cleaning are currently not considered to be preferable in policy terms.

The Soil Quality Decree sets quality requirements for the building materials produced through immobilisation. Building materials, for example, should be used in useful works and should comply with maximum emission values and composition values[123]. Under the Environment and Planning Act, which entered into force on 1 January 2024, there are additional rules for the application of waste incinerator bottom ash and immobilisers. Among other things, there is now an obligation to provide information. General data should be provided, mainly related to the presence of substances of very high concern. In addition, specific data must be recorded: 1. The expected date of start of the use of incinerator bottom ash or immobilisers;

2. The expected date of completion of the work;
3. The quantity of incinerator bottom ash or immobilisers (in cubic metres) that is used;
4. The origin of the incinerator bottom ash or immobilisers;
5. The quality of the incinerator bottom ash or immobilisers;
6. The coordinates of the receiving land-based soil or surface water body;
7. An environmental statement on soil quality (the environmental hygiene quality of the building material)[124].

This means that the use of immobilisates is now linked to a more extensive administrative process.

The application of bottom ash in concrete has added value in terms of its nature and composition and can be a good substitute for sand. On the basis of the regulations, an immobilisate is a formed building material that meets the requirements during the life-stage and therefore also has a minimal risk of contamination of the soil. Nevertheless, risks to the environment, such as leaching of heavy metals into groundwater, arise, for example, due to misuse.

3.2 Autonomous developments

As indicated above, the decision to immobilise or clean a waste is left to the market. In this supply and demand market, three factors play an important role, namely: (1) the price the customers are willing to pay for cleaned material, (2) the cleaning costs and (3) the price of primary material as an alternative. The level of bottom ash also plays an important role.

Decontaminated products are currently difficult to find outlets[11]. This is to a large extent caused by the high costs of cleaning. The washing facilities required represent a major investment and landfill costs

122 LAP3.2, Section D.4.4.5.3

123 Building materials - Bodem+ (bodemplus.nl)

124 Scope and information requirement for building materials (section 4.123 Bal) - Information point for the living environment (iplo.nl)

11 Information from expert meetings dated 10 May 2023.

the residual residue is relatively high. On the other hand, lack of confidence on the quality of the cleaned product, and more specifically on the safety of the substances, is a factor that affects the customers. This is (partly) caused by a number of incidents in the past. Some examples are bottom ash batteries, steel slag applied incorrectly and problems with applied thermally cleaned soil. Although these incidents have affected the market for secondary building materials. In addition, it is important that primary raw materials, for which the cleaned secondary materials are an alternative, are in many cases cheaper. Secondary raw materials are (therefore) more expensive and have a higher risk of contamination. As a result, there are few incentives to use secondary raw materials instead of primary ones.
A CROW study on Blending Bottom Ash into Non-Structural Concrete is ongoing. Specifically, the possibility of adding washed bottom ash to concrete, rather than non-washed bottom ash, is being explored.

In conclusion, this means that if the choice of cleaning or immobilisation is left to be left, it is mainly immobilised in the current circumstances. This is because it is cheaper and has a better market for the time being. However, it should be noted that the outlet for immobilisates is larger than for cleaned materials, but that this outlet is also not very large. In the case of immobilisates, many principals also have doubts about the safety of the use of immobilisates. E. examples are also provided where leaching was still occurring in immobilisates. This can reduce confidence in immobilates and potentially lead to fewer immobilisates being deployed in the future.

It should also be seen in the future that sand may become a critical raw material. In 2022, the United Nations Environment Program issued a report calling on governments to recognise the importance of sand as critical material and take steps to work towards a sustainable solution[125]. In this document, they indicate that sand plays an essential role in stabilising ecosystems but also as a building material. The balance between sand as a raw material and sand in its role in providing ecosystem services is affected by the high demand for sand from balance. This is why, among other things, it calls for greater use on alternative secondary materials such as sand from dredged material or cleaned soil[126]. This would require the authorities to consider encouraging the cleaning and application of the cleaned raw materials.

Another relevant development is that, due to the loss of the ‘IBC building material’ category, there is also a large volume of granular and moderate contaminated residual streams, which could previously be reused as IBC building material but now qualified as non-applicable material. These flows can be immobilising, but changed policies will require them to be landfilled, as they are highly employable instead of primary resources.

3.3 Baseline: alternative iA.a.

Figure 3.1 shows the baseline situation for this topic, as described in the previous paragraphs. Figure 3.2 is the legend applicable to Figure 3.1 and the following master diagrams.

In the current situation and the reference situation, business economics considerations play a key role in deciding whether to clean or immobilised. As a result, batches of residues are converted into immobilisable technically.

125 Sand and Sustainability: 10 strategic recommendations to operate crisis; UNEP, 2022

126 Sand and Sustainability: 10 strategic recommendations to operate crisis; UNEP, 2022, p.45

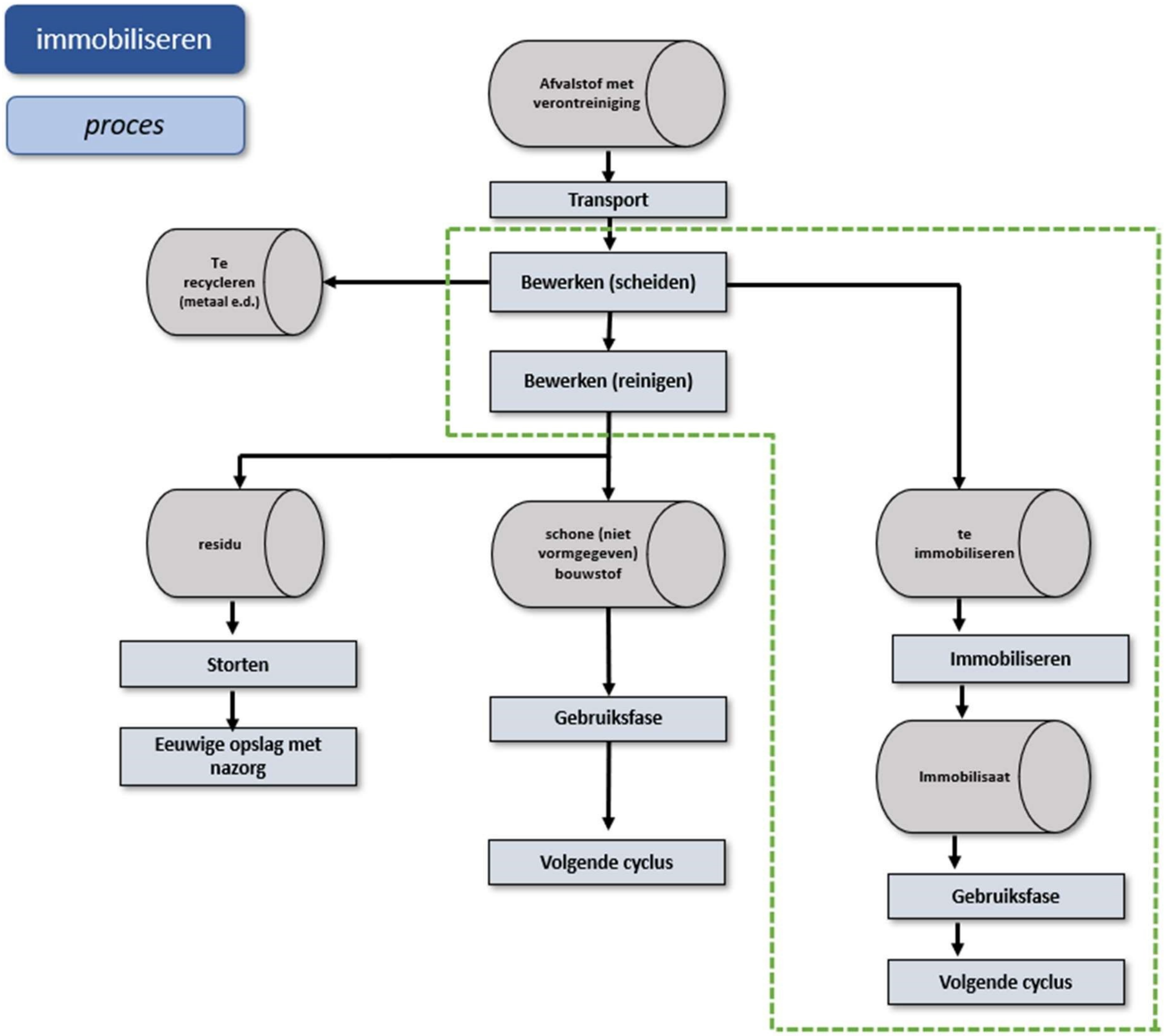

Figure 3.1. Immobilise process chart reference situation

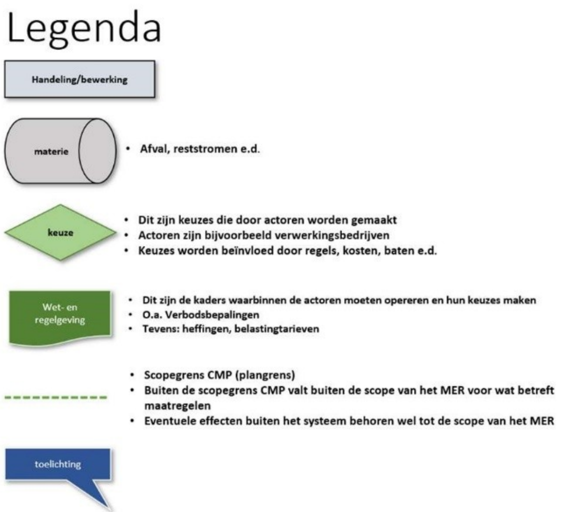

Figure 3.2. Key to process and steering diagrams

4. Immobilise alternatives

4.1 Overview of alternatives

4.1.1 The alternatives

The underlying goal of the policy choice on immobilisation is to move to a society where raw materials are circular and kept as long as possible, without significant risks to people and the environment. Thus, the potential for keeping contaminants in the cycle and the risk of their dispersion into the environment must be balanced against the longer retention of useful materials in the chain. This means that the policy can be used to maximise the reuse of materials, or to remove contaminants from the cycle as much as possible. Several factors play a role in this trade-off. The alternatives are intended to allow this assessment to be made. Therefore, in addition to the baseline situation (iA.a, the zero alternative, see Chapter 3), the following alternatives have been considered for the policy choice of 'immobilisation':

- iA.b Immobilisation only if cleaning to a material that meets the requirements for non-formed building materials is technically impossible;
- iA.c Immobilisation only if it is certain that you will image the immobilisate in a subsequent cycle; iA.d Immobilisation only if the material itself already meets the requirements for non-formed construction materials (composition and leaching), with a deviation from a maximum percentage to be determined, e.g. 10%;
- iA.e Combinations of alternatives iA.b, iA.c and iA.d to be selected

No iA.e combination alternative

Alternative iA.e was announced in the NRD, but it was decided not to develop and assess it as a separate alternative. The reasons are that different combinations are possible (logical and less logical) and that some arbitrary choices are made about what would be highlighted to assess in this EIA. It may also interfere with the Ministry's choice of the policy option to be included in the draft CMP. Instead of developing and assessing a combination alternative, Chapter 7 of this report deals, as part of the reflection, with possible combinations of alternatives, optimisations of alternatives and recommendations (from the Environmental Impact Assessment) for the choices that will be made for the CMP.

The alternatives have been assessed in relation to the baseline situation (iA.a. zero alternative).

4.2 Alternative iA.b

4.2.1 Description

This alternative is defined as follows: Immobilisation only if cleaning to a material that meets the requirements for non-formed building materials is technically impossible.

The starting point for this alternative is to require cleaning. Immobilisation is only permitted in cases where cleaning is not technically possible.

In this alternative, more pollutants are removed from the cycle than in the baseline situation. This involves the separation (and subsequent landfilling) or destruction of contaminants. Compared to the reference situation, more material is cleaned and therefore more contaminants are removed structurally from the cycle. This, however, means that more cleaning residue and possibly washing water to be dumped are produced, but also an increase in the amount of secondary raw materials that meet the requirements of applicability. In addition, this alternative allows material streams to be retained in the chain by means of immobilisation as a shaped building material in case cleaning is not technically possible[127]. Immobilisates are only made from materials that are not technically decontaminable. This may mean – assuming cleaning

In particular, for some heavily and complex contaminated materials, it is not technically possible – that in this alternative the immobilisates contain relatively many, or a larger variety of, pollutants compared to the immobilisates in the reference situation. However, the total quantity is lower than in the reference situation, due to (much) lower production of immobilisate.

In this alternative, Figure 4.1 is relevant. This diagram outlines the processing options from the moment a residual substance can be immobilised. This residual substance is first transported to a processing site where it is separated from the material to be recycled (e.g. metals). The further processing steps following this step are outside the scope of this alternative. The dotted line shows the scope of this alternative as indicative, i.e. the sub-process where measures in this alternative have a primary impact. The impact assessment describes relevant impacts across the system.
After separation, it is possible to choose whether to clean or immobilise the material. Cleaning results in a freely usable building material and a residue that needs to be landfilled. This alternative relates to the choice to require cleaning if technically possible. In this way, there is more material (compared to the reference situation) via the 'Process (clean)' step, and less material 'To Immobilise'.

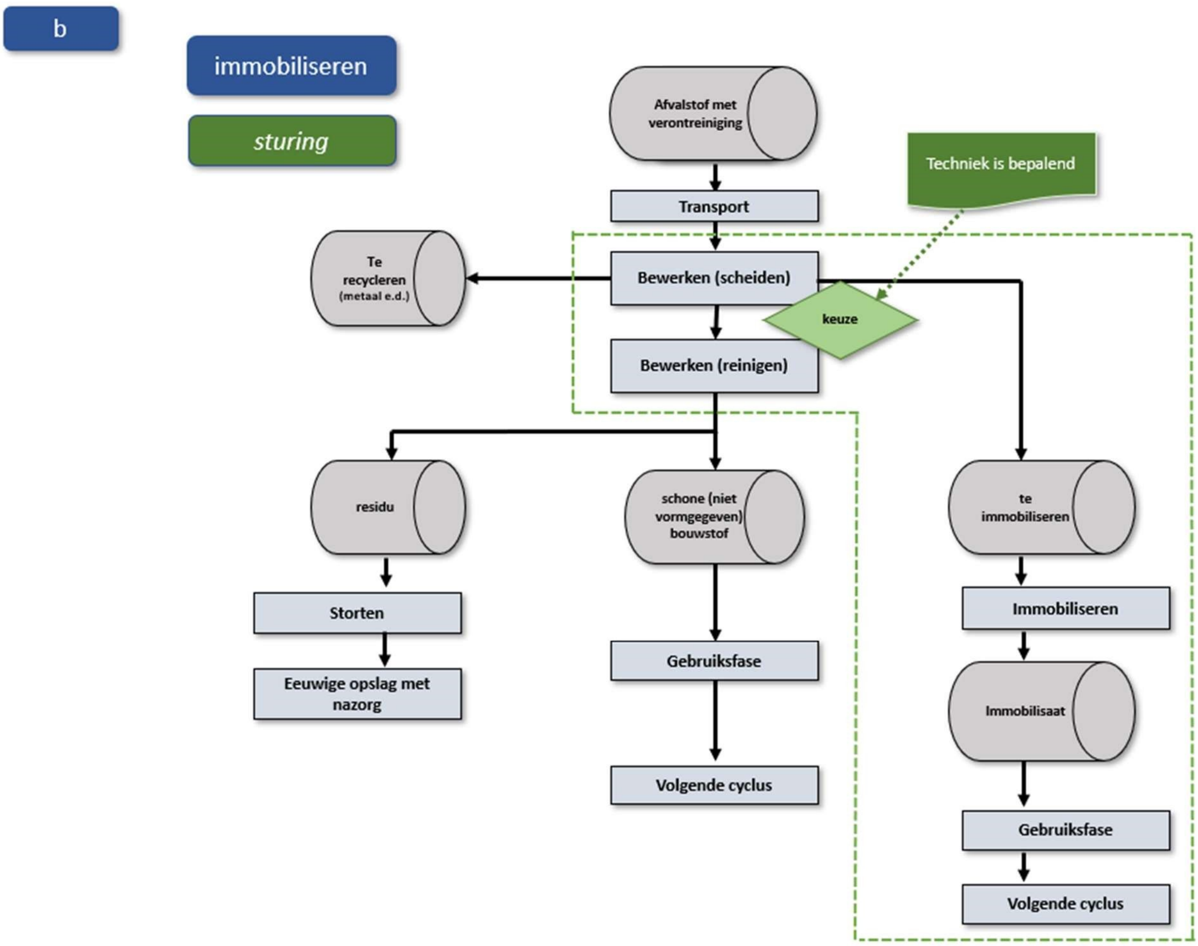

Figure 4.1. iA.b. steering control

In this alternative, it is relevant that, from a technical point of view, much is already possible with regard to cleaning. In current practice, the costs of cleaning (including the costs of processing the cleaning residue) and the outlets of the cleaned

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materials are decisive for the choice (made by the market) between cleaning and immobilisation. If, as in this alternative, everything that is technically decontaminable is actually cleaned, this choice will no longer exist.

The use of more separation techniques is likely to lead to higher costs compared to the baseline. The cleaning obligation can contribute to market investments in cleaning facilities, as the cleaning obligation can contribute to providing more certainty about the supply of materials to be cleaned. In the long run, this may also contribute to a decrease in cleaning costs.

In this alternative, it is necessary to clearly define the provision 'as far as technically possible'. Clear frameworks are already in place for contaminated soil[128], but for other streams this still needs to be shaped. It is therefore necessary to define the substances that can be cleaned and thus given a cleaning obligation, as well as the substances that may be immobilised.

4.2.2 Evaluation

Circularity target range

Thema	Subdoel	Indicator	Score iAb
Doelbereik circulariteit	Efficiënt grondstoffengebruik	Gebruik primaire grondstoffen	+
		Verhouding hernieuwbare – niet-hernieuwbare grondstoffen in producten	0
	Stimuleren van hoogwaardige verwerking van afvalstoffen	Aandeel/percentage van de stoffen dat naar een hogere trede in de afvalhiërarchie gaat	0
		Aandeel/percentage van de stoffen dat op dezelfde trede in de afvalhiërarchie blijft, dan wel hoogwaardiger binnen dezelfde trede	+
		Aandeel/percentage van de stoffen dat naar een lagere trede in de afvalhiërarchie gaat	0
	Effect op de kwaliteit van secundaire materialen, ook bij een eventuele volgende recyclingcyclus	Toepasbaarheid	+
		Terugneembaarheid	+
		Bewerkbaarheid	+

Table 4.1: circularity alternative 1Ab target range

On balance, no more secondary materials are produced in this alternative than in the reference situation (actually, and possibly even slightly less because a cleaning residue is produced). However, there is a shift compared to the baseline situation. This alternative requires fewer (primary) raw materials (due to the possibility of using cleaned materials instead of primary raw materials). The assessment of the primary raw material use indicator is therefore positive (+). The alternative has no effect on the ratio of renewable – non-renewable raw materials in products. For this reason, the assessment of this indicator is also neutral (0).

In this alternative, a greater focus on separation and cleaning leads to more clean raw materials being introduced back into the chain. However, this alternative does not move to a higher step, i.e. to continue recycling. The assessment of the indicator 'share/percentage of substances moving to a higher level in the waste hierarchy' is therefore neutral (0). For the indicator 'share/percentage of substances remaining in the same step in the waste hierarchy, or in the same step in a higher quality', the assessment is positive (+) because after cleaning the material has a higher quality and can be applied with less risk over several cycles. The assessment on the indicator 'share/percentage of substances that go to a lower step in the waste hierarchy' is also neutral (0) because there is no shift to a lower step (a small amount of cleaning residue is returned to landfill and incineration target range).

128wetten.nl - Regeling - Regeling beoordeling reinigbaarheid grond 2006 - BWBR0020104 (overheid.nl))

Compared to the baseline situation, this alternative leads to more cleaned raw materials, which are quite applicable. . For this reason, the assessment is positive by applicability, returnability and workability. (+).

Landfill and incineration target range

Thema	Subdoel	Indicator	Score iAb
Doelbereik storten en verbranden	Bijdrage aan het beperken van storten/verbranden	Hoeveelheid storten per jaar	-
		Hoeveelheid verbranden per jaar	0

Table 4.2: Landfill and incineration alternative IAb target range

The alternative is to produce more cleaning residue that is landfilled. Therefore, this alternative scores a low negative (-) on the indicator indicator score of landfill/year. This alternative has no effect on the amount of incineration/year, i.e. a neutral score (0).

Environmental impact

thema	Aspect	Indicator	Score iAb
Omgevings-effecten	Emissie van broeikasgassen	Emissie (in CO2-equivalenten)	+
	Energiegebruik	Gebruik fossiele brandstoffen	+
		Energiegebruik	+
	Watergebruik	Watergebruik	-
	Emissie van stikstof	Emissie Nox en NH3	+
	Effect op risico's voor mens en milieu door de verspreiding van schadelijke stoffen	Verspreiding van verontreinigingen naar bodem, (grond)water of atmosfeer	++
		Bijdrage aan minder overschrijding van normen bodem-, water- en luchtkwaliteit	++

Table 4.3: Environmental effects of alternative 1Ab

In terms of greenhouse gas emissions, the impacts are positive (+). The alternative leads to less immobilisation and consequently to a reduction in the use of cement. This has a positive impact on greenhouse gas emissions. Other building materials will be used to compensate immobilisates. Production of these materials will also lead to greenhouse gas emissions. This alternative focuses on increasing cleaning performance. This is an additional (energy-intensive) step which often does not happen in the baseline situation, and thus results in additional emissions. The effect of reducing cement deployment is expected to be considered, making the score slightly positive (+).
The same reasoning ensures that energy use scores positive (+). For example, cleaning uses more fossil fuels and energy, but less cement with positive impacts on these indicators. In line with this reasoning, the added intensive processes also mean that more machines have to be run to ensure that materials are cleaned, as opposed to a decrease in cement use. The impact on the 'nitrogen emissions' aspect is therefore also positive (+).

Water use scores negative (-). This is because the cleaning processes use a lot of washing water. This water is not necessary for immobilisation processes.

The impact on risks to people and the environment from the spread of harmful substances is very positive in this alternative (++). While contaminants are not destroyed, they are concentrated in the residue during cleaning and then landfilled and controlled. The basic principle is that these contaminants are contained in a more limited number of sites with a high degree of control. This is an improvement compared to the baseline situation, where contaminants in the immobilisate are in many cases uncontrolled or at an unknown location, with a risk of spreading that cannot be ruled out[129]. Therefore, the indicators score

‘dispersal of pollutants into the soil, water or the atmosphere’ and ‘contribution to reducing the exceedance of standards concerning soil, water and air quality’ are therefore both very positive.

Realisability

thema	Aspect	Indicator	Score iAb
Realiseer baarheid	Uitvoerbaarheid en handhaafbaarheid (overheid)	Uitvoerbaarheid juridisch	0
		Handhaafbaarheid praktisch	0
		Handhaafbaarheid financieel	-
		Kosten indirect en/of lang(ere) termijn	++
	Uitvoerbaarheid en handhaafbaarheid (markt)	Uitvoerbaarheid praktisch	-
		Handhaafbaarheid praktisch	-
		Economische haalbaarheid	--

Table 4.4: Realisability of alternative 1Ab

Government

The feasibility and enforceability scores positively for the administration (+). This is because the positive effects of this alternative for the public authorities outweigh the negative effects.

The legal practicability indicator is neutral (0). Additional frameworks have to be set against the baseline, but this is unlikely to be a major legal challenge. As described in the description of the alternative, these frameworks already exist for land[130]. This will make it easier to use these frameworks for other contaminated streams as well. It will, however, become necessary to establish clear and unambiguous regulations for which materials (by composition, nature and complexity of contaminants) can be technically cleaned. Separation at the source could also be a possibility to set clear frameworks on what can be blended. This type of arrangement may also take into account non-technical aspects, such as the costs and size of the lot in question. In addition, separate rules may be drawn up for SVHCs if desired.

Enforcement will require more effort compared to the reference situation, as the reference situation does not require enforcement under the waste policy to check whether cleaning or immobilisation is necessary. Compliance scores in a neutral way (0), as it is expected that enforcement is not very difficult in practice. However, the financial aspect of compliance scores negatively (-). The extra effort entails additional costs. This includes a clear case-by-case check on the quality of the material and technical feasibility of cleaning. This will require more effort and thus increase costs.

The indicator ‘indirect and/or longer-term costs’ scores highly positive (++). This is due, among other things, to a significant reduction in the risk of leaching of contamination. This also reduces the cost of soil remediation as a result of this contamination. The company often bears this cost in the current situation. Beyond the direct, long-term clean-up costs, this alternative also reduces the indirect costs for the public authorities. This is because reducing pollution that remains in the chain reduces exposure to harmful substances. This has a positive impact on human health and the environment, which is cost-effective.

Market

129 With the introduction of the Environment and Planning Act, the traceability of substances has also been improved.

130wetten.nl - Regeling - Regeling beoordeling reinigbaarheid grond 2006 - BWBR0020104 (overheid.nl)[18]

Information from expert meeting dated 10 May 2023 and dated 22 August 2023

The feasibility and enforceability of the market score negative (-). In practical terms, this alternative is feasible for the market. There are several streams that could be immobilised. The picture on cleanability and marketability may vary from one stream to another. For the main electricity stream, incinerator bottom ash, the picture that currently lacks cleaning capacity for processing yet and the saleability of the secondary material produced is difficult[18].

The practical compliance score is negative (-) compared to the reference situation. In the current situation, the market itself chooses when it is cleaned or immobilised. However, in the new situation there will be more rules that will influence this decision, which will lead to more paperwork that will have to confirm the choice of immobilisation.

However, the economic feasibility of this alternative is highly negative (--). This is because, in this case, economic feasibility is highly dependent on the market for the secondary material produced. This depends on the difference in the price of cleaned material in relation to primary raw materials and, in this case, also on the image of the secondary materials. Cleaning is relatively expensive, leading to secondary raw materials that are more expensive than the primary raw materials they can replace. This is especially because the primary raw material in question is mainly sand, which is a very cheap primary raw material. Furthermore, the image of cleaned products is not good. This was due to an incident with battery residues that had been poorly removed[131]. This contributes to the fact that, in the current situation, there is already a limited market for cleaned secondary streams, such as cleaned incinerator bottom ash. This could lead to problems if a large supply of secondary materials is created without expanding the sales market. In this alternative, all are immobilised but streams that are not cleanable and have a higher risk. This will further weaken the image and confidence in immobilates, and thus render them decomposable.

However, it should also be mentioned that the immobilisate consumer market is currently also experiencing problems. It is unclear how the market of cleaned materials or immobilisates will develop, but with the current transition to a circular economy and the fact that sand may become a critical raw material, the cleaned materials could become a growing market in the future.

The economic feasibility of this alternative will therefore depend heavily on how the market for the cleaned materials develops. This is an aspect in which the authorities could also use resources to promote sales. This could include ways to encourage or even oblige the use of secondary materials.

4.3 iA.c alternative

4.3.1 Description

This alternative is defined as follows: Only immobilise if it is certain that you will see the immobilisate in a subsequent cycle

Immobilisates can be used in a new product after a first life stage. This is almost always a case of larger mash, where it is usual to examine the quality of the materials. However, it cannot be ruled out that immobilisates are also unseen in new products.

This alternative refers to the structural (future-proof[132]) identification and maintenance of immobilisates, in order to make it clear in which works and in which locations they have been used. The intention is that it should be clear at the end of the application that it is a material that contains contaminants. This will minimise the risk of diffuse dispersal of contaminants (present in the immobilisate) after the application lifetime. This alternative does not eliminate the risk of accidental leaching during the use phase.

There are at least three possibilities for further developing this alternative, and in particular ‘keeping it in mind’:

131 Idem.

132 The term ‘sustainable’ could be used here, but was not chosen due to the associations it evokes.

1. Register immobilisates;
2. use only immobilisates in specific recognisable applications;
3. use of immobilisates in specific (large) works;

Where relevant, descriptions of these variants have been included in the alternatives.

A good and future-proof method of registration is an important condition for the eventual environmental impacts of this alternative. Information about the immobilisate is important when (at the end of the use phase) an immobilisate is reintegrated into the chain. The information to be recorded for waste streams and applications should be clearly defined in advance. This will allow you to retrieve a lot of relevant information on the first life cycle. Registration under the Environment and Planning Act is mainly aimed at the responsible application of the immobilisate. This alternative requires additional regulation in order to keep the immobilisate in sight until the end of life cycles.

The use of immobilisates in recognisable applications is also an option. This works best in a situation where an immobilisate is always used in a certain way. One example is application in specific noise barriers (in a specific project and/or time period). It is then always clear that immobilisates can be used in these materials. This will reduce the search area for potential contaminants. This will make it easier to control the spread of contaminants. Furthermore, this could prevent the unnecessary abandonment of material, as it can be assumed that all immobilisates realised after the entry into force of this new policy are in principle always confined to these noise barriers.

For the specific (large) works, this will also require registration to keep an eye on the specific works, again the system must be such that the immobilisate is visible throughout the life cycle. The advantage of this variant is that the number of works is specific and manageable, and that the challenge for checking and monitoring for leaching is clear. It also limits the risk of unplanned leaching to a few locations.

This alternative is the same basic process as described in the previous alternative. However, an additional step is added to the process by recording information about the immobilisate in a system and keeping it in mind until the end of the use phase. This is visually illustrated in Figure 4.2.

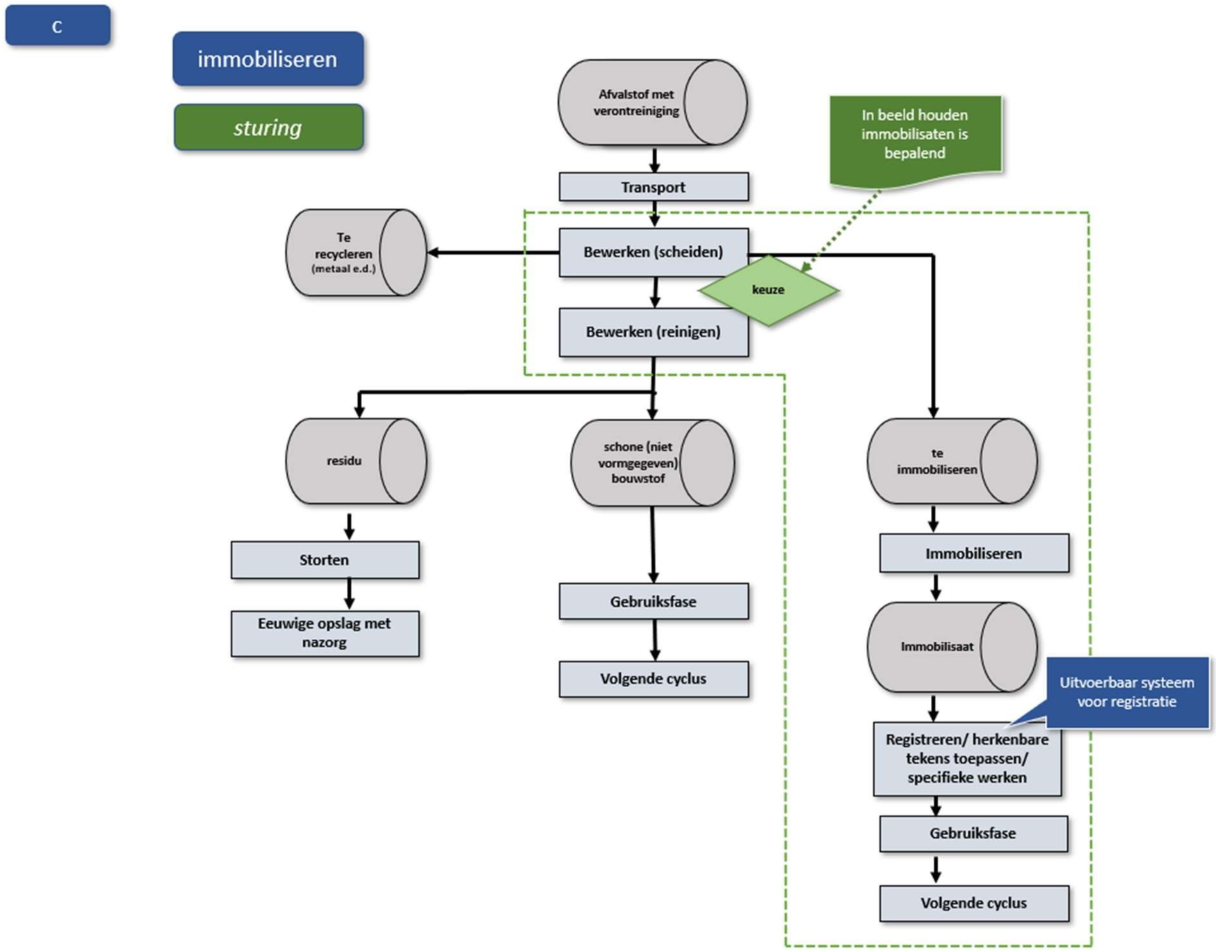

Figure 4.2. iA.c. steering control

The dotted line shows the scope of this alternative as indicative, i.e. the sub-process where measures in this alternative have a primary impact. The impact assessment describes relevant impacts across the system.

In this alternative, a processor should have clarity as to whether or not the immobilisate can be kept on display. If this is not possible, the waste stream should be cleaned or, if cleaning is not technically possible, landfilled. This balancing test is added to the balancing of the costs and benefits of cleaning compared to immobilising. This means that if the image is feasible (and less commercially attractive to clean compared with immobilisation), the choice will in most cases result in immobilisation. The extent to which this alternative will lead to an increase in cleaning and a decrease in immobilisation will depend on a number of factors, such as the type of requirements and possible additional costs. Compared to the reference situation, there is a risk that the amount of immobilisate that can be created will be reduced as it cannot be ensured in all cases that the immobilisate can be visualised. For processors, this alternative may provide an incentive to develop techniques and/or systems to display immobilisate, thereby enabling immobilising. This impact cannot be estimated properly, but is expected to be limited. For this reason, this impact is not taken into account in the assessment.

This alternative leads to a situation where the implemented immobilisates are traceable and verifiable. This reduces the risk of unmarked spread of contamination at the end of the lifespan of an immobilisate.

4.3.2 Evaluation

Circularity target range

Thema	Subdoel	Indicator	Score iAc
Doelbereik circulariteit	Efficiënt grondstoffengebruik	Gebruik primaire grondstoffen	0
		Verhouding hernieuwbare – niet-hernieuwbare grondstoffen in producten	0
	Stimuleren van hoogwaardige verwerking van afvalstoffen	Aandeel/percentage van de stoffen dat naar een hogere trede in de afvalhiërarchie gaat	0
		Aandeel/percentage van de stoffen dat op dezelfde trede in de afvalhiërarchie blijft, dan wel hoogwaardiger binnen dezelfde trede	0
		Aandeel/percentage van de stoffen dat naar een lagere trede in de afvalhiërarchie gaat	0
	Effect op de kwaliteit van secundaire materialen, ook bij een eventuele volgende recyclingcyclus	Toepasbaarheid	0
		Terugneembaarheid	+
		Bewerkbaarheid	0

Table 4.5: Circularity alternative 1AC target range

In this alternative, no more secondary materials are produced in any of the variants (for the way in which the materials are displayed), and in this alternative the method of processing is not used. As with alternative iA.b, a (probably relatively small) shift from immobilisation to cleaning on balance has no effect (0) on the use of primary raw materials, as both fairly applicable cleaned material and immobilisate are considered as secondary raw materials. If immobilisate is reduced, alternative raw materials are needed. The alternative has no impact on the ratio of renewable – non-renewable raw materials in products, and is therefore assessed as neutral (0) also on this indicator.

In general, the sub-objective of efficient use of raw materials is subject to little change compared to the current situation. As a result, the assessment is neutral.

As with alternative iA.b, this alternative does not move to a higher step, iA.b. continuing to recycle. The assessment of the indicator ‘share/percentage of substances moving to a higher level in the waste hierarchy’ is therefore neutral (0). For the indicator ‘share/percentage of substances remaining on the same level in the waste hierarchy, or in a higher quality within the same level’, the assessment is neutral for this reason (0). Indeed, unlike alternative iA.b., there is no material of higher quality after cleaning. The assessment on the indicator and ‘share/percentage of substances moving to a lower grade in the waste hierarchy’ is also neutral (0) as there is no shift to a lower grade.

The image of the immobilisates has in principle no effect on the quality of the product. The assessment for the indicators applicability and workability is neutral as the alternative does not lead to other processing methods. However, the recycling process will become ‘more manageable’. Registration (in any form according to the variants listed) provides more insight into the composition and properties of the immobilisates. This will help to make the ‘ease’ of handling at the end of the service period – after a raw material has been processed – that can be kept in the cycle. For the recoverability indicator, this means a positive assessment.

Overall, the assessment for the sub-target has an impact on the properties of secondary materials, also in a possible next recycling cycle, which is neutral.

Landfill and incineration target range

Thema	Subdoel	Indicator	Score iAc
Doelbereik storten en verbranden	Bijdrage aan het beperken van storten/verbranden	Hoeveelheid storten per jaar	0
		Hoeveelheid verbranden per jaar	0

Table 4.6: Landfill and incineration alternative 1Ac target range

This alternative has no effect on the level of processing or cleaning. Therefore, there is no impact on landfill and incineration as compared to the baseline situation. For this reason, this alternative scores in neutral (0) on the indicators of landfill/year and incineration/year. However, it is assumed that the recording requirements for immobilisates do not result in a shift to cleaning (see section 4.3.1, under the figure).

Environmental impact

thema	Aspect	Indicator	Score iAc
Omgevings-effecten	Emissie van broeikasgassen	Emissie (in CO2-equivalenten)	0
	Energie- en watergebruik	Gebruik fossiele brandstoffen	0
		Energiegebruik	0
		Watergebruik	0
	Emissie van stikstof	Emissie Nox en NH3	0
	Effect op risico's voor mens en milieu door de verspreiding van schadelijke stoffen	Verspreiding van verontreinigingen naar bodem, (grond)water of atmosfeer	+
		Bijdrage aan minder overschrijding van normen bodem-, water- en luchtkwaliteit	+

Table 4.7. Environmental effects alternative 1Ac

The starting point is that there is a workable system for the image of immobilisates, which in many cases makes the choice for the market still more expensive to immobilise rather than to clean more expensive products. This means that there is little change in the processes. Therefore, greenhouse gas emissions, energy use, water use and nitrogen emissions all score neutrally (0).

As indicated in section 4.3.1, the main effect of this alternative is to ensure that the implemented immobilisates are traceable and possibly also restricted to specifically designated locations and/or works. The advantage is that immobilisers do not disappear from the sight and can be properly controlled and monitored. In the case of application on a limited number of works, the risk of unexpected leaching is also limited to a few locations. This reduces the undetected spread of pollution. However, the risk cannot be completely excluded. On the one hand, the fact that during the works it is not always possible to place the same facilities in order to prevent dissemination, e.g. a large batch adjacent to a work and not used once. On the other hand, errors may be made during construction. Bottom ash is recorded, but it does not preclude contamination.

The impact on risks to people and the environment from the spread of harmful substances is therefore positive (+). The condition is that the image-keeping system is functioning well in the long term. This is because the risk of leaching is particularly limited at the end of the life cycle. Leaching is still possible during the use phase.

Realisability

thema	Aspect	Indicator	Score iAc
Realiseer baarheid	Uitvoerbaarheid en handhaafbaarheid (overheid)	Uitvoerbaarheid juridisch	0
		Handhaafbaarheid praktisch	-
		Handhaafbaarheid financieel	-
		Kosten indirect en/of lang(ere) termijn	+
	Uitvoerbaarheid en handhaafbaarheid (markt)	Uitvoerbaarheid praktisch	0
		Naleefbaarheid praktisch	0
		Economische haalbaarheid	+

Table 4.8. Realisability of alternative 1Ac

Government

The feasibility and enforceability of the administration are negative (-).

The legal feasibility indicator for the registration scores in a neutral (0) position with respect to the reference situation. This is because the reference situation under the new Environment and Planning Act also introduces a registration requirement for immobilisate. It should be noted, however, that the image of immobilisates requires additional attention during import and export. The choice should be made as to whether to impose this obligation on producers and how to organise and enforce it.

Furthermore, for enforcement purposes, it is relevant to state that the regulation of the Environment and Planning Act is not aimed at ‘keeping track’ of the immobilisate until its end of life and beyond in subsequent cycles. This will require additional effort. For example, the registration system used for the Living Environment Act needs to be complemented with the possibility of keeping immobilised in the long term. Furthermore, when restricting immobilisate to specific applications or works, additional enforcement should take place that is not necessary in the baseline situation. Therefore, the practical enforceability scores negative (-). Maintaining a registration system that has to store data in the long term also entails costs. These additional costs ensure that the financial enforceability also scores negative (-).

However, the indicator ‘indirect/or long (more) term costs’ scores positively (+). This is because this alternative greatly reduces the potential for leaching of contaminants at the end of the life-stage, thus avoiding the costs of the negative effects of such leaching. However, this indicator is not very positive because leaching is not restricted during the use phase.

Market

Feasibility and compliance for the market score positive. The feasibility scores neutral (0) because registration for immobilisates is already mandatory under the Environment and Planning Act, registration under the CMP would therefore not cost additional work if the registration systems could be linked. Applying to specific large works or applications also poses relatively few practical difficulties.

The practical compliance for registering immobilisates will again be covered by the impact of the Environment and Planning Act, not the CMP. For the use in specific works or applications, it is likely that a manufacturer will have to demonstrate that immobilisate is only applied in the permitted manner. However, the impact of this measure will be limited. Therefore, this indicator is also neutral (0).

Economic feasibility is a more complex indicator. Once again, the costs of registration will not result from the policy potentially included in the CMP and are therefore negligible in the context of this EIA. The costs of applying to specific works or applications will also not exceed those of the baseline. The consumer market will change. Better monitoring of immobilisates could lead to greater confidence in the market and hence increased sales. The magnitude of this impact is difficult to estimate. This is because the image of immobilisate does not resolve the risk of potential leaching in the use phase, only the spread of contamination at the end of the life phase. How much this creates a previously positive image may also have a negative economic impact from using immobilisate in specific works or applications. If applications or works are chosen where all the immobilisate currently produced is not adequately disposed of, this will mean that more cleaning is needed. This is more expensive than immobilising and therefore less attractive in terms of economic potential (see also economic feasibility in 4.2.2.). The indicator is awarded a positive score (+) because the costs are neutral and the benefits are more likely to be positive.

4.4 iA.d alternative

4.4.1 Description

The alternative should be described as follows: Immobilisation only if the material itself already meets the requirements for non-moulded building materials (composition and leaching), with a deviation from a maximum percentage to be determined, e.g. 10%

In this alternative, relatively clean materials are used to return only (in the form of an immobiliser) to the chain. Working with a certain margin above the standard is based on the fact that mixing with binder results in at least a dilution. This ensures that, for a second cycle of recycling, even after processing and crushing, building materials cannot give rise to undetected contamination of the raw materials of the future beyond the norm.[133]

In practice, depending on the concentrations of contaminants in the material, this can be developed as follows:

Concentrations in material < BBK requirements < maximum allowed deviation	• Applicable as a non-formed building material without further treatment. • Cleaning or immobilisation is not necessary. • The policy intentions do not relate to these materials. Materials that comply with the Soil Quality Decree can already be freely used and remain so. This is therefore not considered further.
Requirements for BBK < concentrations in material < maximum permitted error	• Immobilisation is permitted without prior treatment (cleaning). • In this case, immobilisation is obvious if the business case is better than cleaning depending on cost and marketing markets (for cleaned equipment and immobilisate)
Requirements BBK < maximum permitted deviation < concentrations in material	Clean and then apply (depending on resulting concentrations) as a non-formed building material (if meeting requirements) or immobilise (if not meeting requirements). Relevant is the effort required to complete the final cleaning step. Cleaning and then immobilising is not obvious, but can be done if there is a better business case. This can occur when the final step of cleaning (up to Bbkeis) is relatively costly (compared with immobilisation); as well as affecting the markets for freely usable materials versus immobilisate

This may involve additional requirements in relation to concentrations of SVHCs. If the presence of SVHCs exceeds a certain level (to be specified for each SVHC), a certain form of processing may be required. This is an addition because the Soil Quality Decree contains an exhaustive set of quality criteria that does not provide for standardisation of most SVHCs.[22]

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In this alternative, the process is to a limited extent different from the previous alternatives. Here also, in most cases, the materials that are immobilised have to be cleaned first. After this cleaning, the processor may choose to immobilise the substance or to market it as a pure, unformed building material. It should be noted that the expert team indicated that in this variant it would not make sense to clean substances up to a certain percentage and then immobilise them. This is not economically likely.[23] For a (expected to be relatively small) part of the materials, there is a possibility to immobilise without a cleaning step. These are materials whose composition does not comply with the requirements for non-formed construction materials, but which are within the maximum permitted deviation. This is illustrated in Figure 4.3.

The dotted line shows the scope of this alternative as indicative, i.e. the sub-process where measures in this alternative have a primary impact. The impact assessment describes relevant impacts across the system.

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[22] Reaction Note on Views –NRD for Environmental Impact Assessment for the Circular Materials Plan

[23] 2nd Expert Team Meeting

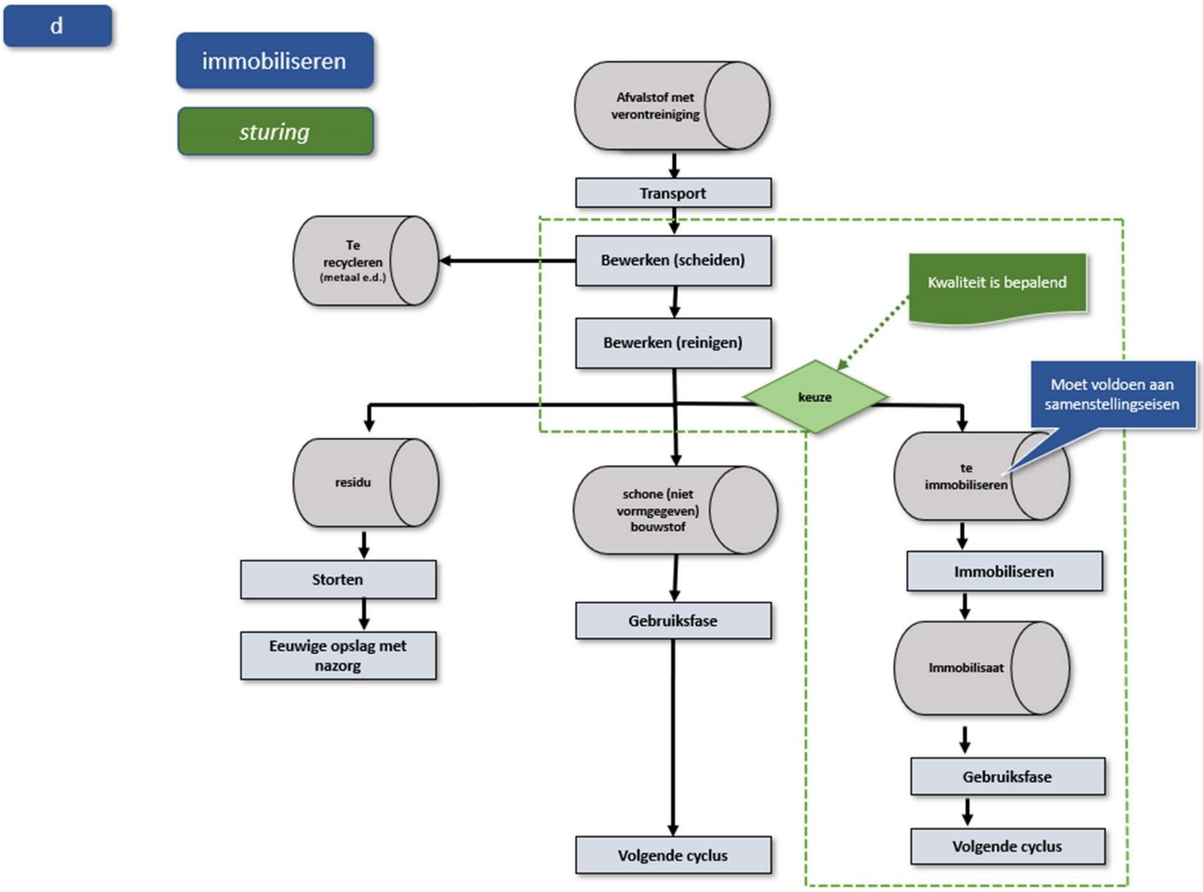

Figure 4.3. iA.d Steering control chart

4.4.2 Evaluation

Circularity target range

Thema	Subdoel	Indicator	Score iAd
Doelbereik circulariteit	Efficiënt grondstoffengebruik	Gebruik primaire grondstoffen	0
		Verhouding hernieuwbare – niet-hernieuwbare grondstoffen in producten	0
	Stimuleren van hoogwaardige verwerking van afvalstoffen	Aandeel/percentage van de stoffen dat naar een hogere trede in de afvalhiërarchie gaat	0
		Aandeel/percentage van de stoffen dat op dezelfde trede in de afvalhiërarchie blijft, dan wel hoogwaardiger binnen dezelfde trede	+
		Aandeel/percentage van de stoffen dat naar een lagere trede in de afvalhiërarchie gaat	0
	Effect op de kwaliteit van secundaire materialen, ook bij een eventuele volgende recyclingcyclus	Toepasbaarheid	+
		Terugneembaarheid	+
		Bewerkbaarheid	+

Table 4.9: Circularity alternative 1Ad target range

On balance, the impact of this alternative is not significant in terms of efficient use of resources. In this alternative, the quantity of immobilisate will decrease compared to the reference situation. Immobilisation is only relevant in this alternative for materials that can be immobilised without cleaning (i.e. with concentrations of contaminants between Bbk and the maximum permitted deviation). In total, no more secondary materials are produced. In fact, even slightly less because [1] a cleaning residue is produced (see landfilling and incineration below target ranges) and [2] because streams that are not technically decontaminable are now moved to landfill (expected to be a small part). As a result, the use of primary raw materials in this alternative is only minimal. The cleaned, freely usable materials will be more widely usable than immobilisate and less cement is needed. The impact on the use of primary substances indicator is therefore neutral (0). However, there is a shift: the amount of cleaned materials that can be used in secondary applications is increasing, the amount of immobilisate (containing recorded) pollutants is decreasing, as in Alternative 1A.b. One consequence of this alternative is that, as a result of cleaning, a small part of the material ends up in the cleaning residue to be landfilled. Both immobilisate and freely usable secondary building materials are secondary (soil) materials. This reasoning is based on the use of (also) immobilisate. If immobilisate does not become available or becomes less available, other materials are needed. Cleaning leads to secondary materials that can more easily stay in the chain in the next cycle, eventually reducing (in the longer term) the production of primary materials. It is unlikely that immobilised substances will be cleaned in the future. Similarly, this alternative has no impact on the ratio of renewable and non-renewable raw materials in products, so this indicator is also scored neutral (0). All in all, this ensures that this sub-goal has been assessed as being equivalent to the reference: neutral effect (0).

In this alternative, a greater focus on separation and cleaning leads to more clean raw materials being introduced back into the chain. However, this alternative does not move to a higher step, i.e. to continue recycling. The assessment of the indicator ‘share/percentage of substances moving to a higher level in the waste hierarchy’ is therefore neutral (0). For the indicator ‘share/percentage of substances remaining in the same step in the waste hierarchy, or in the same step in a higher quality’, the assessment is positive (+) because after cleaning the material has a higher quality and can be applied with less risk over several cycles. The assessment on the indicator ‘share/percentage of substances that go to a lower step in the waste hierarchy’ is also neutral (0) because there is no shift to a lower step (a small amount of cleaning residue is returned to landfill and incineration target range).

For the assessment of the quality of secondary materials, we have two types of effects. This alternative leads, on the one hand, to more cleaned raw materials, which are quite applicable, and, on the other hand, to fewer applications in immobilisates (although the impurities that are difficult to remove are known). The assessment of applicability, recoverability and workability is therefore positive (+).

Landfill and incineration target range

Thema	Subdoel	Indicator	Score iAd
Doelbereik storten en verbranden	Bijdrage aan het beperken van storten/verbranden	Hoeveelheid storten per jaar	--
		Hoeveelheid verbranden per jaar	0

Table 4.10. Landfill and incineration alternative 1Ad target range

This alternative is more substantial than in the reference situation, and alternative 1A.b is more substantial, as it offers very limited possibilities to immobilise impurities. For this reason, this alternative scores highly negative on the landfill criterion per year (--).
This alternative has no effect on the amount of incineration/year, i.e. a neutral score (0).

Environmental impact

thema	Aspect	Indicator	Score iAd
Omgevings-effecten	Emissie van broeikasgassen	Emissie (in CO2-equivalenten)	+
	Energie- en watergebruik	Gebruik fossiele brandstoffen	+
		Energiegebruik	+
		Watergebruik	-
	Emissie van stikstof	Emissie Nox en NH3	+
	Effect op risico's voor mens en milieu door de verspreiding van schadelijke stoffen	Verspreiding van verontreinigingen naar bodem, (grond)water of atmosfeer	++
		Bijdrage aan minder overschrijding van normen bodem-, water- en luchtkwaliteit	++

Table 4.11. Environmental effects alternative 1Ad

In terms of greenhouse gas emissions, the effects are similar to alternative IAb, i.e. positive (+). While the alternative will reduce immobilisation and consequently reduce the use of cement, it does emit additional greenhouse gases. It should be noted that, unlike in iA.b., this alternative does eliminate all cement use.
This line of reasoning also ensures energy use scores positive (+). For example, cleaning uses more fossil fuels and more energy, but less use of cement leads to positive impacts on these criteria. For this reason, the alternative scores positively on the aspect of 'nitrogen emissions' (+).

Water use scores negative (-). This is because the cleaning processes use a lot of washing water. This water is not necessary for immobilisation processes.

The impact on risks to people and the environment from the spread of harmful substances is very positive in this alternative (++). While contaminants are not destroyed, they are concentrated in the residue during cleaning and then landfilled and controlled. The basic principle is that these contaminants are contained in a more limited number of sites with a high degree of control. This is an improvement compared to the baseline situation, where contaminants in the immobilisate are in many cases uncontrolled or at an unknown location, with a risk of spreading that cannot be ruled out. Therefore, the indicators 'dispersal of pollutants into soil, water or the atmosphere' and 'contribution to reducing the exceedance of standards soil, water and air quality' both score very positively (++). It should also be noted that these very positive scores are actually even more positive than the very positive scores at IA.b. This is because at IA.b it may still be immobilised if cleaning is not technically possible. This means that the risk of leaching is not reduced in these cases. This alternative removes all the contaminants from the chain and thus removes that risk.

Realisability

thema	Aspect	Indicator	Score iAd
Realiseer baarheid	Uitvoerbaarheid en handhaafbaarheid (overheid)	Uitvoerbaarheid juridisch	0
		Handhaafbaarheid praktisch	-
		Handhaafbaarheid financieel	0
		Kosten indirect en/of lang(ere) termijn	+
	Uitvoerbaarheid en handhaafbaarheid (markt)	Uitvoerbaarheid praktisch	--
		Naleefbaarheid praktisch	0
		Economische haalbaarheid	--

Table 4.12. Realisability of alternative 1Ad

Government

For the public administration, this is a feasible and enforceable alternative, but the long-term costs score positively. Therefore, this sub-goal scores positively (+).

This alternative is not a problem for the Legal Practicability indicator. The compositional requirements for non-moulded building materials can be taken over from the current regulations. This indicator is therefore neutral (0).

However, more enforcement efforts are needed compared to the baseline situation. For example, in principle, the immobilisate's input should now also be monitored. Previously, in the reference situation, only the quality of the final immobilisate had to be assessed via the BBK. Therefore, the practical enforceability scores negative (-). However, it seems unlikely that much immobilisate would be produced, as the benefits of immobilisation would be diminished if contaminants are no longer present. For this reason, it is expected that the financial impact of the additional enforcement required is very limited. The financial enforceability indicator is therefore neutral (0).

The indicator 'indirect and/or longer-term costs' scores positively (+). This is due, among other things, to a significant reduction in the risk of leaching of contamination. This also reduces the cost of soil remediation as a result of this contamination. The company often bears this cost in the current situation. Beyond the direct, long-term clean-up costs, this alternative also reduces the indirect costs for the public authorities. This is because reducing pollution that remains in the chain reduces exposure to harmful substances. This has a positive impact on human health and the environment, which is cost-effective. However, the overall score of this alternative is not very positive, as it needs to be cleaned. As a result, more falls will occur if this is not technically possible. In this case, iA.b may still be immobilised, which is not the case here. This means that more material is eliminated from the chain and landfills are under more pressure.
The latter indicator is heavily included in the overall assessment of the 'realisability' aspect. Therefore, the overall assessment of this aspect is positive (+).

Market
The feasibility and compliance scores for the market are highly negative (--). This is partly because the practicality scores highly negative (--) because cleaning and then immobilisation is not economically realistic. This alternative would also mean in practice that everything needs to be cleaned. This would make this alternative more similar to iA.b, but without the escape clause respecting the technical possibility of cleaning. However, the alternative leaves some room for the market to consider the best way of working and the optimal (most cost-effective) combination of cleaning and/or immobilisation for each lot. Immobilisation is only of interest (in terms of costs) if cleaning the maximum permitted deviation (10%) to Bbk (0%) is relatively costly. However, the economic feasibility of this alternative is likely to be very low (--) as cleaning everything requires an economically high effort. Although the practical compliance score is neutral (0), the burden of proof of compliance is unlikely to increase significantly for the processor.

5. Using the reference situation as a payment agent

5.1 Policy and Regulations

The reference situation for the topic of aggregate in formed building materials is to a large extent the reference situation for the topic of immobilisation. Both are governed by the same laws and regulations. However, it is important to highlight some distinctive points. In order to prevent uncontrolled mixing away, the LAP does not allow waste types that individually do not meet the quality requirements of the Soil Quality Decree to be mixed in order to comply with those requirements. As an exception, however, this is allowed provided that:

1. the use of the waste as an aggregate is permitted under the minimum standard;
2. the mixing of the substance must not lead to unacceptable exposure of humans or the environment to SVHCs at any time;
3. The use of the substance should contribute to the required properties of the product.
4. the use of primary raw materials that would otherwise have been used to give the product the relevant functional characteristics will be reduced;
5. only blending of functional quantities is concerned;
6. the process does not lead to unwanted reactions between the different flows;

7. the product resulting from the mixing meets all the applicable requirements for use as a building material[134].

5.2 Autonomous developments

In the Netherlands, aggregates are mainly used to produce concrete. This sand and gravel is mostly involved, but depending on the performance requirements of the concrete in question and the availability of sand and gravel, basalt, granite, limestone, quartz and concrete granulate can also be processed. These are raw materials that, together with water and binders, form the final concrete. Increasingly, secondary raw materials are used as an aggregate. This includes raw materials such as pulverised coal fly ash, concrete granulate and incinerator bottom ash. In all cases, these are substances recovered from raw materials previously used, or substances that were previously considered waste and after processing are suitable for use as raw materials for concrete. Some secondary raw materials have properties that make them suitable for use as a binder in concrete. The use of secondary raw materials and the relative share of secondary raw materials (compared to primary raw materials) are expected to increase.

5.3 Reference situation: alternative iB.a

Figure 5.1 shows the baseline situation for this topic, as also described in the previous paragraphs.

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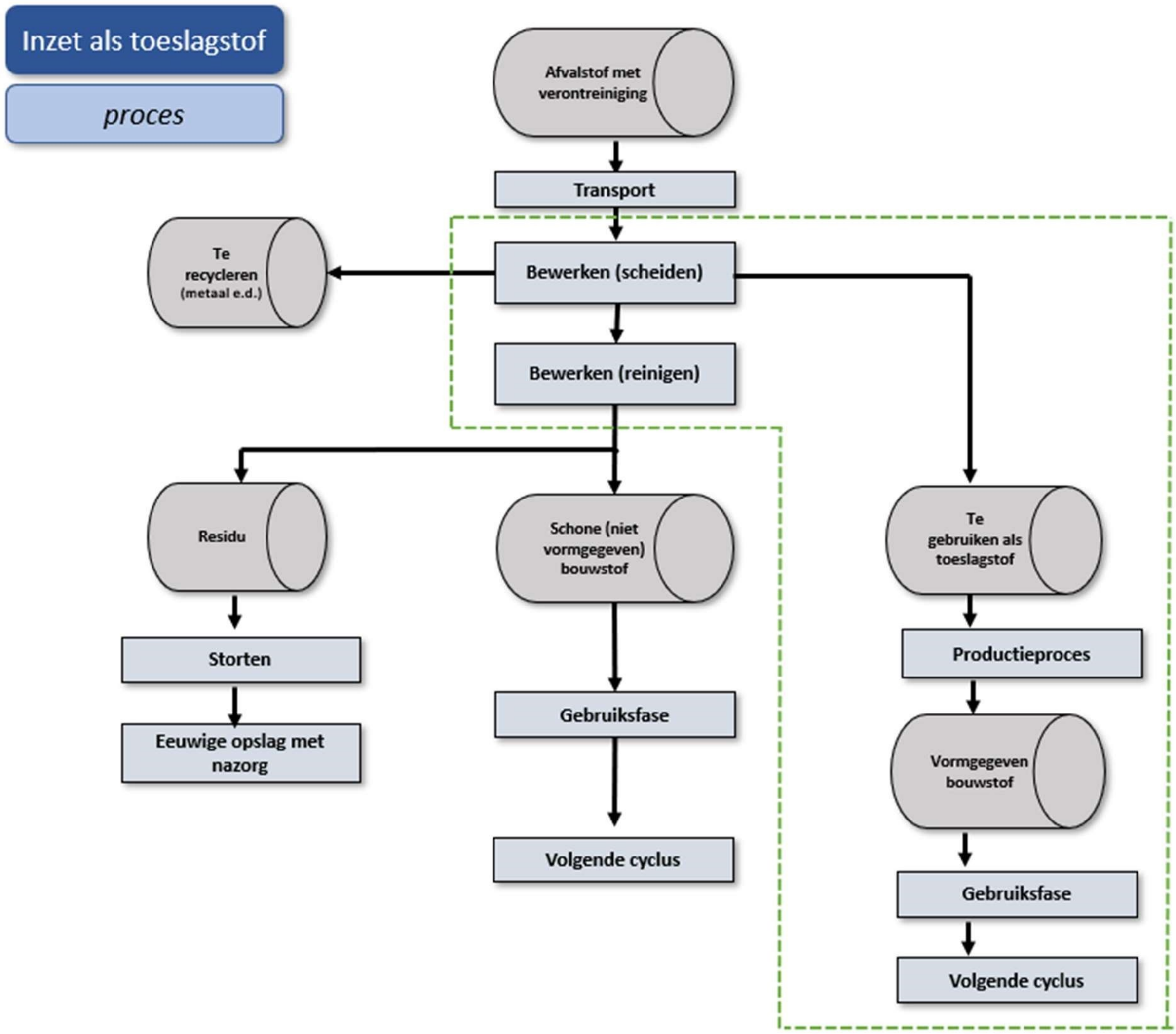


Figure 5.1. Reference situation process chart ‘use as a generator’

6. Using alternatives as a single compound

6.1 Overview of alternatives

As with the Immobilise component, this component aims to keep (usable) materials in the cycle as much as possible (thereby limiting the use of primary raw materials as much as possible, while also removing contaminants from the cycle as much as possible, now or in the future, and minimising the dispersion of environmental pollutants.

The following alternatives have been explored for this topic:

- iB.a The zero alternative (See Chapter 5)
- iB.b Use as an additive only if cleaning into a material that meets the requirements for non-formed building materials is technically impossible

- iB.c Use as an additive in a shaped building material only if you are sure to image the resulting building material in a subsequent cycle
- iB.d Use as an additive in a formed building material only if the material itself already meets the requirements for non-formed building materials (composition and leaching)
- iB.e Combinations of alternatives iB.b, iB.c and iB.d to be selected

Alternative iB.e has not been further elaborated and assessed.

No iA.e combination alternative
Alternative iB.e was announced in the NRD, but it was decided not to develop and assess it as a separate alternative. The reasons are that different combinations are possible (logical and less logical) and that some arbitrary choices are made about what would be highlighted to assess in this EIA. It may also interfere with the Ministry's choice of the policy option to be included in the draft CMP. Instead of developing and assessing a combination alternative, Chapter 7 of this report deals, as part of the reflection, with possible combinations of alternatives, optimisations of alternatives and recommendations (from the Environmental Impact Assessment) for the choices that will be made for the CMP.

The alternatives are assessed against the baseline situation (iB.a zero alternative).

Differences between 'use as aggregates' and 'immobilisation'
The topic 'use as an additive' is distinctive in several respects in relation to the topic 'immobilisation', as described in chapters 3 and 4. This is also reflected in the impact assessment. An important difference is that in the 'use as an aggregate' section, the combination of cleaning and immobilisation is more likely than in the 'immobilisation' section. In addition, in the case of 'immobilisation', the shift to cleaning leads to the saving of cement, but in the case of 'use as a aggregate' this is not the case because the formed building material is nevertheless created, regardless of whether or not contaminated material is used as a aggregate.

Another big difference is that different waste types are used in both topics. Important flux for aggregates is fly ash and blast furnace slag. Sand from termic cleaning or mineral from washed sorted sieved sand can also be used as an aggregate. Flows like soil and fine sand – the ones for immobilisation is important — play hardly any role in the event of an additive. This has an impact in determining the potential for a shift to cleaning.

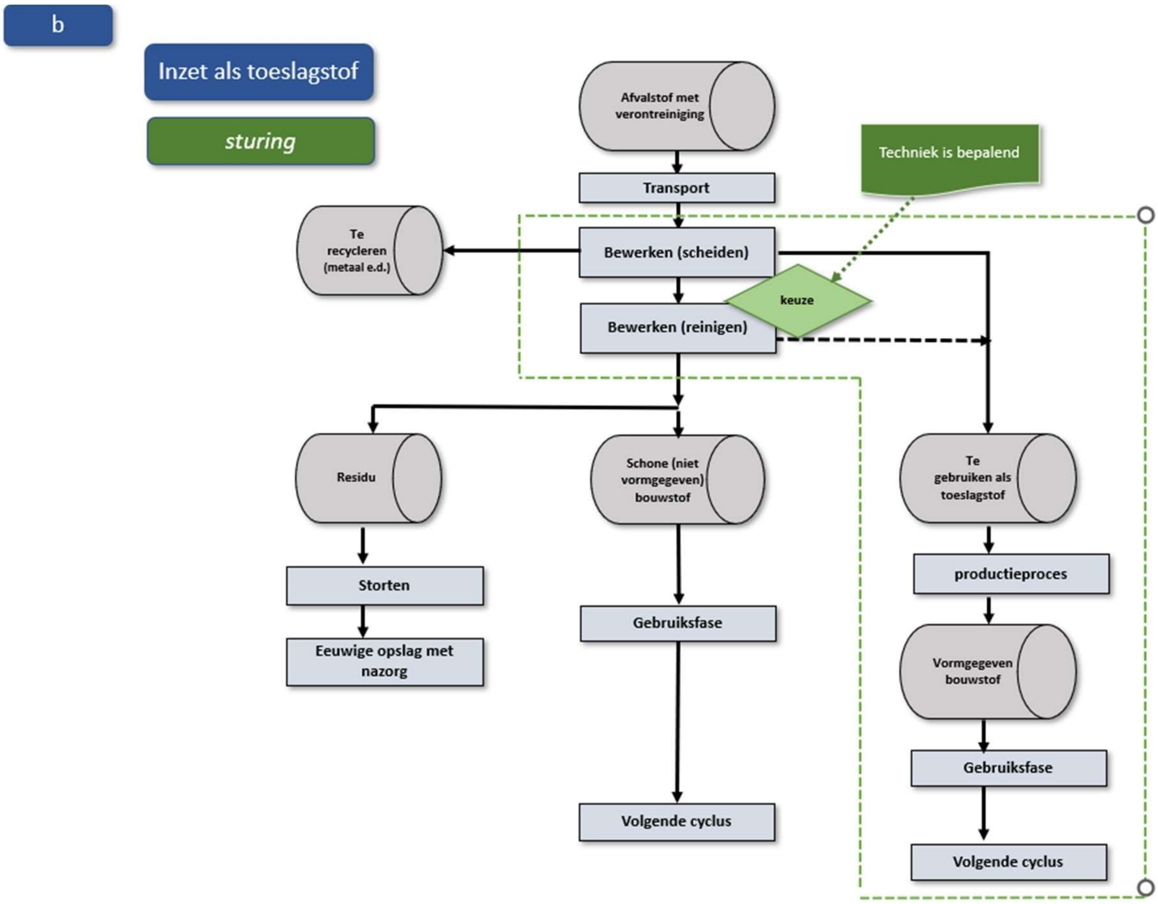
6.2 iB.b. alternative

6.2.1 Description
The alternative should be described as follows: Use as an additive only if cleaning into a material that meets the requirements for non-formed building materials is technically not possible.

This alternative limits the presence of contaminants in the chain. Where it is possible to separate or destroy the contaminants, this will also be done. As a result, as far as the flow in question is concerned, more material is cleaned than in the reference situation. This means more cleaning residue and possibly washing water to be dumped, but also better quality of secondary raw materials. In addition, it remains possible to use material flows as functional quantities in a shaped building material if cleaning is not possible[135].

Figure 6.1. iB.b. steering control

135 Reaction note on views –NRD for Environmental Impact Assessment for the Circular Materials Plan



In this alternative, Figure 6.1 is relevant. This diagram outlines the options for processing from the moment a residual substance can be used as a contaminated aggregate. This residual substance is first transported to a processing site where the material to be recycled is separated from the stream. These further processing steps, which follow after this step, are outside the scope of this alternative. After post-separation, the material may be cleaned or used as contaminated material. When cleaned, this results in a freely usable building material and a residue to be landfilled. In this alternative, it is purely about making cleaning compulsory if technically possible. In this way, more material will go through the 'process (cleaning)' step and less contaminated aggregates will be used.

The dotted line shows the scope of this alternative as indicative, i.e. the sub-process where measures in this alternative have a primary impact. The impact assessment describes relevant impacts across the system.

This alternative is in practice similar to alternative iA.b, with the caveat that cleaning of substances used as aggregates is not always possible. Therefore, the impact is lower than in iA.b.

Again, in this alternative, it is relevant that, from a technical point of view, much is already possible with regard to cleaning. In current practice, the costs of cleaning (including the costs of processing the cleaning residue) and the outlets of the cleaned material are decisive for the choice (made by the market) between cleaning or application as a aggregate. If everything that is technically decontaminable (as in this alternative) is actually cleaned, this choice will no longer exist. However, in this alternative, technically non-decontaminable materials, which can be used as an aggregate (provided that they meet the conditions), may contain relatively many or complex impurities.

The use of more separation techniques is likely to lead to higher costs compared to the baseline. The market only invests if sales are guaranteed. The cleaning obligation can contribute to market investments in cleaning facilities, as the cleaning

obligation can contribute to providing more certainty about the supply of materials to be cleaned. In the long run, this may also contribute to a decrease in cleaning costs.
It is important to note, however, that the production of bottom ash is not a primary process, but a residue of a combustion process. This means that the price has little effect on the production of bottom ash per se, as incineration of waste is much more profitable.

As with alternative iA.b, this alternative requires a clear definition of the clause ‘to the extent technically possible’. There are no clear frameworks in place for the relevant streams (fly ash, blast furnace slag). The comparability with alternative iA.b. should also specify which substances can be cleaned, so these materials should be cleaned. Other substances may be applied as a candidate, subject to certain conditions. It is important for the market that only those substances should be cleaned and allowed to be freely used.

The cleaning requirement removes more contaminants from the cycle compared to the reference situation and produces more clean, directly applicable secondary building materials. While there is a difference with alternative iA.a, there is a real possibility that these freely usable raw materials may still be used as an aggregate. On the contrary, in iA.a, it is very unlikely that these freely usable substances would be immobilised after cleaning.

6.2.2 Evaluation

Circularity target range

	Efficient use of resources	Use of primary raw materials	0
		Ratio of renewable – non-renewable raw materials in products	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	0
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	+
		Share/percentage of substances moving to a lower level in the waste hierarchy	0
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	0
		Returnability	0
		Workability	0

Tabel 6.1: Circularity alternative IBb target range

On balance, no more secondary materials are produced in this alternative than in the baseline situation, and possibly even slightly less because a cleaning residue is produced. However, there is a shift compared to the baseline situation. This alternative requires fewer (primary) raw materials (due to the possibility of using cleaned materials instead of primary raw materials). On the other hand, more (primary) raw materials are needed as a aggregate in formed building materials. Although the crops can serve as aggregates, this will be less than in the reference situation. No more or less material is needed on balance. The assessment of the primary raw material use indicator is therefore neutral. The alternative has no effect on the ratio of renewable – non-renewable raw materials in products. For this reason, the assessment of this indicator is also neutral.

In this alternative, a greater focus on separation and cleaning leads to more clean raw materials being introduced back into the chain. However, this alternative does not move to a higher step, i.e. to continue recycling. The assessment of the indicator ‘share/percentage of substances moving to a higher level in the waste hierarchy’ is therefore neutral (0). For the indicator ‘share/percentage of substances remaining in the same step in the waste hierarchy, or in the same step in a higher quality’, the assessment is positive (+) because after cleaning the material has a higher quality and can be applied with less risk over several cycles. However, this effect is smaller compared to alternative iA.b, as, as indicated above, this alternative is typically for substances that are not or are difficult to clean. The assessment on the indicator ‘share/percentage of substances that go to a lower step in the waste hierarchy’ is also neutral (0) because there is no shift to a lower step (a small amount of cleaning residue is returned to landfill and incineration target range). All in all, this sub-goal has been assessed slightly positive (+).

Compared to the baseline situation, this alternative results, on the one hand, in (moderately) more cleaned raw materials, which can be freely used, and, on the other hand, in fewer aggregate uses, which, however, know the impurities that are difficult to remove. These effects cancel each other, making the assessment neutral for applicability, retrievability and workability (0).

Landfill and incineration target range

	Contribution to landfill/incineration restrictions	Landfill volume per year	-
		Amount of incineration per year	0

Tabel 6.2: Landfill and incineration alternative IBb target range

Compared to immobilisation (iA), a larger proportion of the streams will be able to remain as standard aggregates and therefore do not contribute to a cleaning residue. However, this alternative generates more cleaning residue which is landfilled. For this reason, this alternative scores in a low negative (-) score on the landfill/year indicator. This alternative has no effect on the amount of incineration/year, i.e. a neutral score (0).

Environmental impact

Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents)	-
	Energy and water use	Use of fossil fuels	-
		Energy use	-
		Water use	-
	Nitrogen emissions	Nox and NH3 emissions	-
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	++
		Contribution to reducing exceedance of standards in soil, water and air quality	++

Tabel 6.3: Environmental effects of alternative IBb

In terms of greenhouse gas emissions, the impacts are negative (-). Unlike IA.b, there is no reduction in the production of concrete in this alternative. The reference processes are carried out in the same way in this alternative. However, the cleaning process is added to this. This emits additional greenhouse gases. The same reasoning ensures that energy use also scores negative (-). For example, cleaning uses more fossil fuels (-) and more energy (-). In line with this reasoning, the added intensive processes also mean that more machines have to be run to ensure that the materials are cleaned. This also increases nitrogen emissions, and hence the ‘nitrogen emissions’ aspect also scores negatively (-).

Water use is also negative (-). This is because the cleaning processes use a lot of washing water. This washing water is not required for the production of concrete with contaminated aggregates.

The impact on risks to people and the environment from the spread of harmful substances is very positive in this alternative (++). While contaminants are not destroyed, they are concentrated in the residue during cleaning and then landfilled and controlled. The basic principle is that these contaminants are contained in a more limited number of sites with a high degree of control. This is an improvement on the baseline situation, where concrete with contaminated aggregates is in many cases uncontrolled or unknown, with a risk of spreading which cannot be ruled out. Therefore, the indicators 'Dispersal of pollutants into the soil, water or the atmosphere' and 'Contribution to reducing exceedance of standards for soil, water and air quality' both score very positively.

Realisability

Realisability	Practicability and enforceability (government)	Legal enforceability	0
		Practical enforceability	0
		Financial enforceability	-
		Indirect and/or long term costs	++
	Feasibility and enforceability (market)	Practicability practical	0
		Compliance with practical	-
		Economic feasibility	-

Table 6.4: Feasibility of IBb alternative

The assessment of the feasibility and enforceability for both the government and the market for this alternative is similar to the assessment for alternative iA.b. Only the economic feasibility for the market is more positive.

Government
The feasibility and enforceability scores positively for the administration (+). This is because the positive effects of this alternative for the public authorities outweigh the negative effects.

The legal practicability indicator is neutral (0). Additional frameworks have to be set against the baseline, but this is unlikely to be a major legal challenge. As described in the description of the alternative, these frameworks already exist for land[136]. This will make it easier to use these frameworks for other contaminated streams as well. It will, however, become necessary to establish clear and unambiguous regulations for which materials (by composition, nature and complexity of contaminants) can be technically cleaned. This type of arrangement may also take into account non-technical aspects, such as the costs and size of the lot in question. In addition, separate rules may be drawn up for SVHCs if desired.

Enforcement will require more effort compared to the reference situation, as the reference situation does not require enforcement under the waste policy to check if cleaning is necessary. The practical enforceability scores in a neutral (0) position, since it is expected that enforcement is not very difficult from a practical point of view. The financial aspect of enforceability scores negatively (-). The extra effort entails additional costs. This includes a clear case-by-case check on the quality of the material and technical feasibility of cleaning. This will require more effort and thus increase costs.

The indicator 'indirect and/or longer-term costs' scores highly positive (++). This is due, among other things, to a significant reduction in the risk of leaching of contamination. This also reduces the cost of soil remediation as a result of this contamination. The company often bears this cost in the current situation. Beyond the direct, long-term clean-up costs, this alternative also reduces the indirect costs for the public authorities. This is because reducing pollution that remains in the chain reduces exposure to harmful substances. This has a positive impact on human health and the environment, which is cost-effective.

136 wetten.nl - Regeling - Regeling beoordeling reinigbaarheid grond 2006 - BWBR0020104 (overheid.nl)

Market
Feasibility and compliance for the market score negative (-). This is because the practicality scores in a neutral (0) score. Cleaning capacity is not yet adequate, but experts believe that it will be built upon when cleaning becomes mandatory[137]. In practical terms, this alternative is feasible for the market.

The practical compliance score is negative (-) compared to the baseline. In the present situation, the market itself chooses when it will be cleaned. In the new situation, however, there will be more rules influencing this decision, which will increase the amount of paperwork that will justify the choice of applying contaminated payment aggregates.

However, economic compliance with this alternative scores negatively (-). Compared to cleanable aggregates, the cost of processing non-cleanable substances will increase. This score is more positive than for iA.b. This is because the market of cleaned aggregates will potentially grow if contaminated aggregates are no longer available. Of course, this is only the case for the aggregates where there is no low-cost primary alternative. However, concrete will still have to be produced and will continue to require aggregates for this, regardless of whether they have been cleaned or not. In order to promote the market of secondary aggregates, minimum percentages for the use of recycled aggregates could be mandatory in concrete production.

6.3 iB.c alternative

6.3.1 Description

The alternative is described as: Only use as a aggregate in a shaped building material if you are sure to image the resulting building material in a subsequent cycle

Where it is clear that a product incorporates material with impurities, the risk of undetected dispersion and accumulation of impurities in the raw materials of the future could be avoided separately for the product in question[138]. This alternative does not eliminate the risk of accidental leaching during the use phase.

This alternative is the same basic process as described in the previous alternative. Only an additional step is added to the process. Here, the contaminated aggregate is to be kept in view until the end of the use phase. In this alternative, a processor must therefore consider whether or not the aggregate can be kept in view. If this is not possible, the waste must be cleaned. This means that if the picture does not prove so difficult, this alternative is not likely to result in a lower quantity of contaminated aggregates. However, it will increase the availability of information on the contaminants and reduce the unmarked dissemination. This is illustrated in Figure 6.2.

The dotted line shows the scope of this alternative as indicative, i.e. the sub-process where measures in this alternative have a primary impact. The impact assessment describes relevant impacts across the system.

137 Expert meeting information dated 10 May 2023 and dated 22 August 2023
138 Reaction note on views –NRD for Environmental Impact Assessment for the Circular Materials Plan

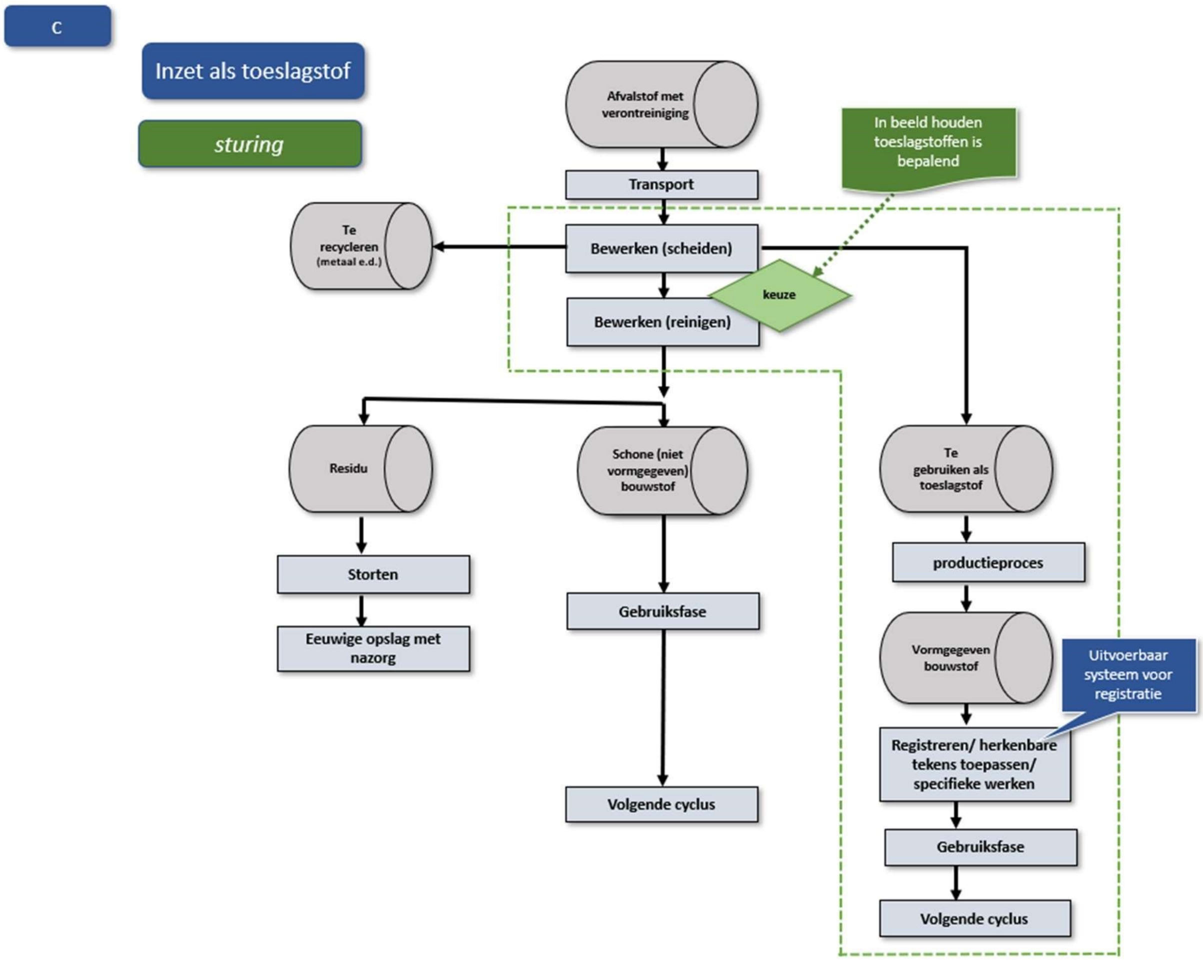


Figure 6.2. Control chart iB.c

There are at least four possibilities for further developing this alternative, and in particular ‘keeping it in mind’:

- register the application of contaminated aggregates;
- Apply only contaminated aggregates in specific, recognisable applications;
- applying contaminated aggregates in specific (large) works;
- Apply recognisable markings on the contaminated aggregate/use specific shapes, such as lego flakes.

These possibilities have also been considered as variants within this alternative (with combinations of course also possible).

A good and future-proof method of registration is an important condition for the eventual environmental impacts of this alternative. Information on the contaminated aggregates is important at the time of (at the end of the use phase) the contaminated aggregates are returned to the chain. According to the experts, information on the composition of the concrete is useful for crushers. The information to be recorded for waste streams and applications should be clearly defined in advance. This will allow you to retrieve a lot of relevant information on the first life cycle. Registration under the Environment and Planning Act focuses on the responsible use of immobilisates and incinerator bottom ash. However, the registration of other aggregates will have to be an additional measure in addition to the Environment and Planning Act, which differs from iA.c. In this alternative, and in this form, supplementary regulation is needed to keep the contaminated aggregates in sight until they reach their end of life.

The use of construction materials with contaminated aggregates in recognisable applications would also be an option. This works best in a situation where the building material is always used in a certain way, for example on noise protection walls. It is therefore always clear that contaminated payment aggregates can have been used in these applications.

For the specific (large) works, this will also require registration to keep an eye on the works, but again the system must be such that the concrete incorporating the immobilisate is visible throughout the life cycle. The advantage of this variant is that the number of works is specific and manageable, and that the challenge for checking and monitoring for leaching is clear. It also limits the risk of unplanned leaching to a few locations.

Finally, the use of recognisable markings is a possible interpretation of this alternative. Some considerations should be taken into account. First, it is important that the marks are still visible and understandable after 30, 50 or even 100 years. It should also be clear what these marks are for in the long term and what this means for further treatment. Finally, the question is what kind of information to convey with the marks is and whether, in addition to the marks, a system of registration is necessary. A system in which the mark refers to a registration system may also be considered. If the marking is a building material with contaminated aggregates, it is likely to make it easier to have a clear long-term view of what the marking means. However, the more information is available on the composition of the aggregates, the more efficient it is at the end of the use phase.

This may be done by making it possible to note that materials (the shaped building material) incorporating contaminated aggregates can be expected to be relatively easily identifiable by marking in the concrete or by using certain shapes such as Lego blocks.

6.3.2 Change the heading of the Judge column to IBc (check all tables below)

Circularity target range

	Efficient use of resources	Use of primary raw materials	0
		Ratio of renewable – non-renewable raw materials in products	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	0
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	0
		Share/percentage of substances moving to a lower level in the waste hierarchy	0
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	0
		Returnability	+
		Workability	0

Table 6.5: Circularity alternative IBc target range

In this alternative, no more secondary materials are produced in any of the variants (for the way in which the materials are displayed), and in this alternative the method of processing is not used. As with alternative iB.b, a (probably relatively small) shift from direct use as a aggregate to cleaning on balance has no effect on the use of primary raw materials, as both fairly applicable cleaned material and aggregate are considered as secondary raw materials. If the aggregate is reduced, alternative raw materials are needed.
The alternative has no impact on the ratio of renewable – non-renewable raw materials in products, and is therefore assessed as neutral on this indicator (0).
Overall, there is little change in the sub-objective of efficient use of raw materials compared to the current situation. As a result, the assessment is neutral (0).

In this alternative, a greater focus on separation and cleaning leads to more clean raw materials being introduced back into the chain. As with alternative IBb, this alternative does not move to a higher step, but rather continues to recycle. The assessment of the indicator ‘share/percentage of substances moving to a higher level in the waste hierarchy’ is therefore neutral (0). For the indicator ‘share/percentage of substances remaining on the same level in the waste hierarchy or in a higher quality within the same level’, the assessment is neutral (0). This is because, unlike iB.b., there is no material that is of higher quality after cleaning. The assessment on the indicator ‘share/percentage of substances moving to a lower grade in the waste hierarchy’ is also neutral (0) as there is no shift to a lower grade.

In principle, keeping the aggregates on display does not have any impact on the quality of the product. The assessment for the indicators applicability and workability is neutral (0) as the alternative does not lead to other processing methods. However, the recycling process will become ‘more manageable’. Registration (in any form in accordance with the variants listed above) will increase the visibility of the composition and properties of the aggregate material used. This will help to make the ‘ease’ of handling at the end of the service period – after a raw material has been processed – that can be kept in the cycle. For the recoverability indicator, this means a positive rating (+).

For the whole assessment on the sub-target, the impact on the properties of secondary materials is neutral (0) even in a possible next recycling cycle.

Landfill and incineration target range

	Contribution to landfill/incineration restrictions	Landfill volume per year	0
		Amount of incineration per year	0

Table 6.6: Landfill and incineration alternative IBc target range

This alternative has no effect on the level of processing or cleaning. Therefore, there is no impact on landfill and incineration as compared to the baseline situation. For this reason, the Alternative Scores Neutral Indicators Landfill Quantity/Year and Incineration Quantity/Year (0)

Environmental impact

Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents)	0
	Energy and water use	Use of fossil fuels	0
		Energy use	0
		Water use	0
	Nitrogen emissions	Nox and NH3 emissions	0
	Impact on risks to people and the environment through dissemination of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+

Table 6.7: Environmental effects of alternative IBc

The environmental effects are given the same scores as in iA.c., immobilisates or aggregates does not make any difference. The starting point is that there is a workable system for the image of immobilisates, which in many cases makes the choice for the market still more expensive to immobilise rather than to clean more expensive products. This means that there is little change in the processes. Therefore, greenhouse gas emissions, energy use, water use and nitrogen emissions all score neutrally (0).

As indicated in section 4.3.1, the main effect of this alternative is to ensure that the formed construction materials used are traceable and possibly also limited to specifically identified locations and/or works. The advantage of this is that the moulded building materials will not disappear from the sight and can be properly controlled and monitored. In relation to the IBc (immobilisy) alternative, the identification of the use is less straightforward because of the presence of aggregates in smaller areas of building materials, e.g. as a concrete powder and pillars. The concentration may also be lower, making it more difficult to measure.

In the case of application on a limited number of works, the risk of unexpected leaching is also limited to a few locations. This reduces the undetected spread of pollution. The impact on risks to people and the environment from the spread of harmful substances is therefore positive (+). The condition is that the image-keeping system is functioning well in the long term. This is because the risk of leaching is particularly limited at the end of the life cycle. Leaching is still possible during the use phase.

Realisability

Achievable	Practicability and enforceability (government)	Legal enforceability	0
		Practical enforceability	-
		Financial enforceability	-
		Indirect and/or long term costs	+
	Feasibility and enforceability (market)	Practicability practical	0
		Compliance with practical	-
		Economic feasibility	+

Table 6.8: Realisability of IBc alternative

The feasibility of this alternative is very similar to that of iA.c. However, the difference here is that practical enforceability is more difficult for public authorities. This is because the registration system used for immobilisation from the Environment and Planning Act does not yet exist for all payment aggregates. This also makes the practical feasibility for the market a little more difficult.

<u>Government</u>
The feasibility and enforceability of the administration is neutral in terms of its aspect (0).

The legal feasibility indicator for the registration scores in a neutral (0) position with respect to the reference situation. This is because the reference situation under the new Environment and Planning Act also introduces a registration requirement for immobilisate, a kind of equal regime can be introduced for aggregates.

However, practical enforceability is more challenging than iA.c. Registration under the Environment and Planning Act, which focuses on the responsible use of immobilisates and incinerator bottom ash. This means that the registration of other payment additives must become an additional measure on top of the Environment and Planning Act. It is also relevant to report that this regulation does not aim to ‘monitor’ the contamination up to the end of a lifecycle and beyond in subsequent cycles. This also requires more complex enforcement. Therefore, the practical enforceability scores negative (-). Furthermore, in limiting the use of contaminated aggregates to specific uses or works, additional enforcement should take place that is not necessary in the baseline situation. Maintaining a registration system that has to store data in the long term also entails costs. These additional costs ensure that the financial enforceability also scores negative (-).

However, the indicator ‘indirect/or long (more) term costs’ scores positively (+). This is because this alternative greatly reduces the potential for leaching of contaminants at the end of the life-stage, thus avoiding the costs of the negative effects of such leaching. However, this indicator is not very positive because leaching is not restricted during the use phase.

<u>Market</u>
Feasibility and compliance for the market score positive. The feasibility scores are neutral (0). While the registration for aggregates will involve additional work, applying it in specific large works or applications, or using marks poses relatively little practical difficulties. This therefore leads to a neutral score overall.

Unlike in iA.c., practical compliance for the registration of payment aggregates will require additional effort compared to the reference situation. As in iA.c., in this case too, when using specific works or applications, or applying marks, the producer will probably have to be able to demonstrate that contaminated aggregates are only applied in the authorised manner. When combined, this indicator scores negative (-).

Economic compliance is a more complex indicator. Unlike in iA.c., the costs of registration here will result from the policy possibly included in the CMP. Applying marks could also represent a small extra cost. However, the costs of applying to specific works or applications will not exceed those of the baseline. The consumer market will change. Better monitoring of contaminants could lead to greater confidence in the market and hence increased sales. The magnitude of this impact is difficult to estimate. This is because retaining contaminants does not solve the problem of potential leaching in the use phase, only the spread of contaminants at the end of the life phase. How much this creates a previously positive picture may also have a negative economic impact from the use of contaminated aggregates in specific works or applications. If applications or works are chosen where all concrete with contaminated aggregates currently produced is not adequately disposed of, this will mean that more cleaning is needed. This is more expensive than immobilising and therefore less attractive in terms of economic potential (see also economic feasibility in 4.2.2.). The indicator is awarded a positive score (+) because the costs are neutral and the benefits are more likely to be positive.

6.4 Alternative iB.d

6.4.1 Description

The alternative is described as: Use as an aggregate in a formed building material only if the material itself already meets the requirements for non-formed building materials (composition and leaching).

Unlike alternative iA.d, this alternative does not include the possibility to apply lightly contaminated material (with a maximum deviation from the compositional requirements). In this alternative, the choice was made to keep clean materials only as an aggregate in the chain. This is a greater limitation of applicability compared to iA.d (immobilisate) alternative. The ‘escape’ listed under alternative iA.d is not applicable for the aggregates. As a result, in practice no contaminated materials can be used (even if the contamination is low). This alternative would also not allow the use of material that cannot technically be cleaned as an aggregate (although in the reference situation). In fact, this alternative is therefore more akin to the existing policy in LAP3 that it is permitted to use contaminated materials, which do not themselves meet the Soil Quality Decree requirements, in functional quantities, in moulded building materials.

As a result, this alternative leads to the need for cleaning (if landfilling is not allowed). However, it should also be noted that the intermediate category of substances that fall in iB within that limit of 10% contamination is low. In addition, many contaminated substances used as additives are not decontaminable or are difficult to clean. If a landfill is not possible, as many useful applications as possible will be sought for these substances. For these reasons, the shift to ‘cleaning’ in this alternative will be limited.

Importantly, the provisions on quality also take account of SVHCs. If this is not done, there is a risk that materials contaminated exclusively by SVHCs might still remain in the cycle. This is an addition because the Soil Quality Decree contains an exhaustive set of quality criteria that does not provide for standardisation of most SVHCs[139].

In this alternative, the process is slightly different from the previous alternatives. Here, all substances should first be cleaned as far as possible. After this cleaning, the processor may choose to use the substance as an aggregate, or one may choose to market the substance as pure, unformed building material. The visualisation is shown in Figure 6.3.

The dotted line shows the scope of this alternative as indicative, i.e. the sub-process where measures in this alternative have a primary impact. The impact assessment describes relevant impacts across the system.

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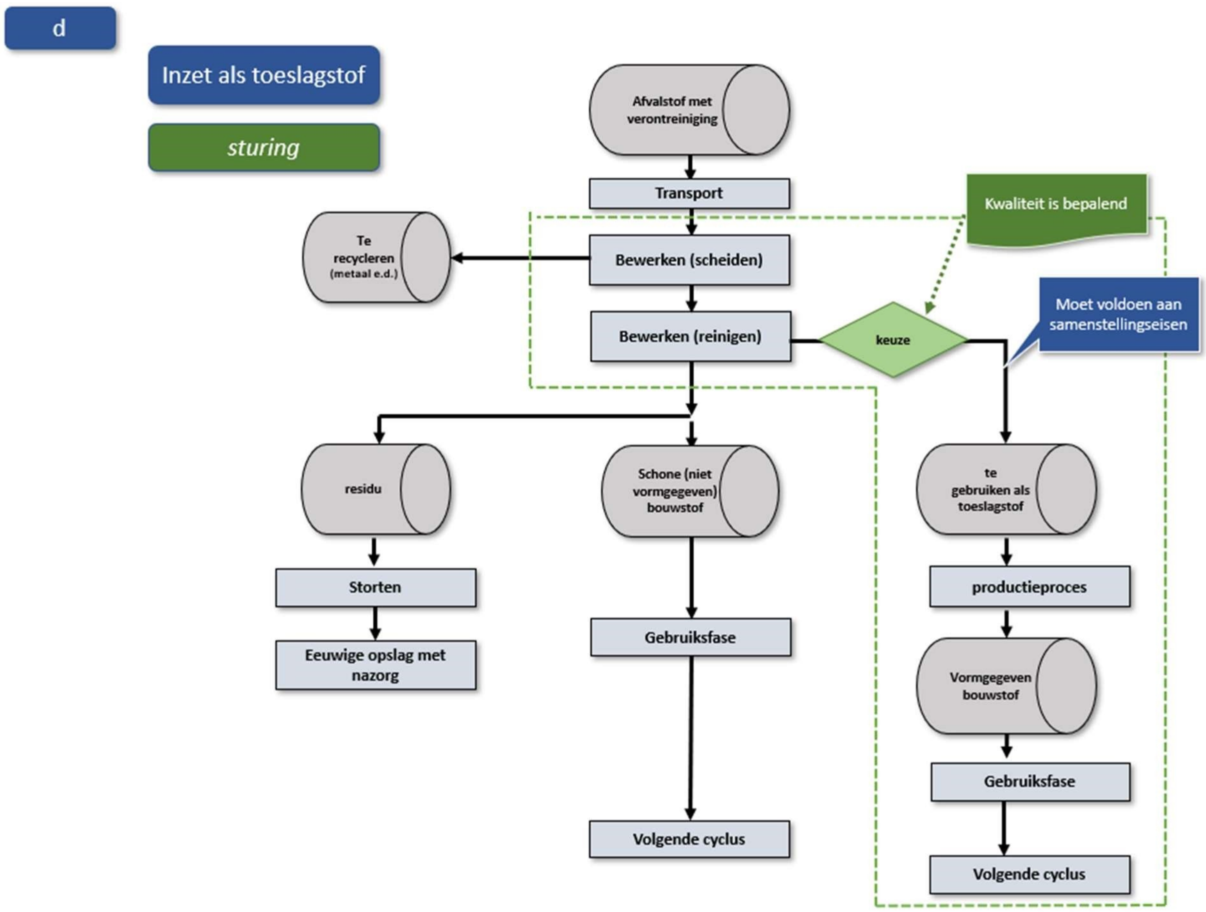

Figure 6.3. iB.d. steering control

In this alternative, there is a clear difference between iA.d. and iA.d. Immobilisation would probably no longer be the case, but the use of payment aggregates remains relevant even if they are not contaminated. This illustrates the difference between immobilisation and the use of contaminated payment additives. Immobilisation is a process specifically aimed at the inerting of contamination. Payment additives, on the other hand, have a specific function in the final product. This function remains relevant even when there are no impurities left in the substance. This means that use as an aggregate after a cleaning step is more realistic than cleaning followed by immobilisation in alternative iA.d.

6.4.2 Evaluation

As a general remark, a generic assessment of the alternatives to immobilisation and of the alternatives to aggregate disregards the specific characteristics of the different waste streams that may be processed in this way. The main value of the assessments is to compare alternatives with each other.

Circularity target range

	Efficient use of resources	Use of primary raw materials	0

		Ratio of renewable – non-renewable raw materials in products	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	0
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	+
		Share/percentage of substances moving to a lower level in the waste hierarchy	-
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	+
		Returnability	+
		Workability	+

Table 6.9: Circularity alternative IBd target range

On balance, the impact of this alternative is not significant in terms of efficient use of resources. In this alternative, the amount of the aggregates will decrease compared to the reference situation. The production of secondary materials did not change in total and therefore the use of primary raw materials in this alternative did not change. The impact on the use of primary substances indicator is therefore neutral (0). However, there is a shift: the amount of cleaned secondary materials that can be used increases, the amount of aggregate with contaminants decreases, as with alternative iB.b. One consequence of this alternative is that, as a result of cleaning, a small part of the material ends up in the cleaning residue to be landfilled.

As mentioned in section 6.1, cleaning is not possible for all waste that is currently used as an aggregate. It is precisely in this alternative that the loss of the ability to use the substance as a generator could lead to shifts to other forms of recovery, e.g. use in filling mines, or that recovery of relatively dirty flows would no longer be possible at all. However, this indirect effect is difficult to quantify in advance and is therefore not taken into account in the assessment.

Both the aggregate and freely usable secondary building materials are secondary (soil) materials. The starting point for this reasoning is that (also) aggregates are given a useful application. If the aggregate becomes unavailable or less available, other materials are necessary. Cleaning leads to secondary materials that can more easily stay in the chain in the next cycle, eventually reducing (in the longer term) the production of primary materials. Furthermore, this alternative has no impact on the ratio of renewable and non-renewable raw materials in products. All in all, this ensures that this sub-goal has been assessed as being equivalent to the reference: neutral effect (0).

In this alternative, a greater focus on separation and cleaning leads to more clean raw materials being introduced back into the chain. However, this alternative does not move to a higher step, i.e. to continue recycling. The assessment of the indicator ‘share/percentage of substances moving to a higher level in the waste hierarchy’ is therefore neutral (0). For the indicator ‘share/percentage of substances remaining in the same step in the waste hierarchy, or in the same step in a higher quality’, the assessment is positive (+) because after cleaning the material has a higher quality and can be applied with less risk over several cycles. The assessment on the indicator ‘share/percentage of substances moving to a lower level in the waste hierarchy’ is negative (-) as there may be a shift to a lower level (more landfilling or recovery).

Compared with the baseline situation, this alternative leads, on the one hand, to more cleaned raw materials, which are quite applicable, and, on the other hand, to fewer uses as aggregates, which, however, know the impurities that are difficult to remove. The impact of cleaning is expected to be considered, so that the assessment is positive by applicability, returnability and workability (+).

Landfill and incineration target range

	Contribution to landfill/incineration restrictions	Landfill volume per year	--
		Amount of incineration per year	0

Table 6.10: Landfill and incineration alternative IBd target range

In this alternative, the situation under reference has increased, with alternative iB.b., which offers very limited possibilities to immobilise impurities. In some cases, the landfill will go to landfill directly, as cleaning is not a viable option. For this reason, this alternative scores highly negative on the landfill criterion per year (--).
This alternative has no effect on the amount of incineration/year, i.e. a neutral score (0).

Environmental impact

Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents)	-
	Energy and water use	Use of fossil fuels	-
		Energy use	-
		Water use	-
	Nitrogen emissions	Nox and NH3 emissions	-
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of contaminants into soil, (ground) water or atmosphere	++
		Contribution to reducing exceedance of standards in soil, water and air quality	++

Table 6.11: Environmental effects of alternative IBd

In terms of greenhouse gas emissions, the impacts are negative (-). Unlike IA.d, there is no reduction in the production volume of concrete in this alternative. The reference processes are carried out in the same way in this alternative. However, the cleaning process is added to this. This emits additional greenhouse gases. The same reasoning ensures that energy use also scores negative (-). For example, cleaning uses more fossil fuels (-) and more energy (-). In line with this reasoning, the added intensive processes also mean that more machines have to be run to ensure that the materials are cleaned. This also increases nitrogen emissions, and hence the ‘nitrogen emissions’ aspect also scores negatively (-).

Water use is also negative (-). This is because the cleaning processes use a lot of washing water. This washing water is not required for the production of concrete with contaminated aggregates.

The impact on risks to people and the environment from the spread of harmful substances is very positive in this alternative (++). Although not destroyed, contaminants are concentrated in the residue during cleaning (as far as cleaning is possible) and then landfilled and controlled (assuming no shift towards landfilling and/or other recovery is found). The basic principle is that these contaminants are contained in a more limited number of sites with a high degree of control. This is an improvement on the baseline situation, where concrete with contaminated aggregates is in many cases uncontrolled or unknown, with a risk of spreading which cannot be ruled out. Therefore, the indicators ‘Dispersal of pollutants into the soil, water or the atmosphere’ and ‘Contribution to reducing exceedance of standards for soil, water and air quality’ both score very positively. It should also be noted that these very positive scores are in fact even more positive than the very positive scores with IB.b. This is because in the case of IB.b, contaminated aggregates may still be used if cleaning is technically impossible. This means that the risk of leaching is not reduced in these cases. This alternative removes all the contaminants from the chain and thus removes that risk.

Realisability

Realisability	Practicability and enforceability (government)	Legal enforceability	0
		Practical enforceability	+
		Financial enforceability	0
		Indirect and/or long term costs	+
	Feasibility and enforceability (market)	Practicability practical	-
		Compliance with practical	0
		Economic feasibility	-

Table 6.12: Realisability of IBd alternative

<u>Government</u>
For the government, enforceability is a challenge in the current situation. This alternative simplifies the blending policy by applying generic mixing rules, without exceptions. This will make enforceability easier for the administration. Therefore, the sub-objective of this alternative is feasible and enforceable positive (+).

This alternative is not a problem for the Legal Practicability indicator. The compositional requirements for non-moulded building materials can be taken over from the current regulations. This indicator is therefore neutral (0).

However, more enforcement efforts are needed compared to the baseline situation. For example, in principle, the input of the formed construction materials should now also be monitored. Previously, in the reference situation, only the quality of the final moulded building materials had to be tested through the Soil Quality Decree (Bbk). This section should also include a check that no further contaminated payment is used. However, this standard is clear, with no exceptions, so that the practical enforceability is positively assessed (+). This additional level of enforcement also incurs additional costs, but at the same time reduces costs due to the lapsing of exceptions. As a result, the enforceability scores in a financially neutral (0). This is different from iA.d because the formed building material will still have to be produced regardless of the regulations on aggregates.

The indicator ‘indirect and/or longer-term costs’ scores positively (+). This is due, among other things, to a significant reduction in the risk of leaching of contamination. This also reduces the cost of soil remediation as a result of this contamination. The company often bears this cost in the current situation. Beyond the direct, long-term clean-up costs, this alternative also reduces the indirect costs for the public authorities. This is because reducing pollution that remains in the chain reduces exposure to harmful substances. This has a positive impact on human health and the environment, which is cost-effective. However, this alternative is not very positive because it needs to be cleaned (insofar as the relevant flows can also be). As a result, more falls will occur if this is not technically possible. At iB.b., contaminated aggregates may still be used, but this is not the case here. This means that more material is eliminated from the chain and landfills are under more pressure.

<u>Market</u>
The feasibility and enforceability of the market score negative (-). The feasibility score is negative (-). However, the combination of cleaning and subsequent use as an additive in a shaped building material is realistic in this alternative, as opposed to cleaning and subsequent immobilisation in alternative iA.d. However, the problem is again that this alternative means in practice that everything (needs to be cleaned) must be done. If this is not possible, a shift towards landfilling or

recovery will take place. This would make this alternative more similar to iB.b (cleaning as far as technically possible), but without the escape clause respecting the technical possibility of cleaning. However, the economic feasibility of this alternative is likely to be higher than iA.d, but lower than the baseline. This indicator therefore scores negatively (-), as cleaning everything requires an economically higher effort. Although the practical enforceability scores neutral (0), it is unlikely that the processor will have much additional effort to demonstrate compliance with the regulations.

7. Full Consideration

7.1 Immobilisation section

7.1.1 Full assessment

Section 4 of this report describes the impacts of the alternatives and provides tables for each alternative. Table 7.1 provides an overview of these assessments (compared to the baseline situation). Table 7.3 (page 61), following section 7.3, presents the main findings on how alternatives will be developed in practice. Based on the assessments in Chapter 4, an assessment per sub-objective or indicator has been made against the reference. This has been done for each alternative. These assessments are graphically shown for the three alternatives in Figure 7.1; included after section 7.3

Table 7.1: Overview of assessments

	Efficient use of resources	Use of primary raw materials	+	0	0
		Ratio of renewable – non-renewable raw materials in products	0	0	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	0	0	0
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	+	0	+
		Share/percentage of substances moving to a lower level in the waste hierarchy	0	0	0
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	+	0	+
		Returnability	+	+	+
		Workability	+	0	+
	Contribution to landfill/incineration restrictions	Landfill volume per year	-	0	--
		Amount of incineration per year	0	0	0
Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents)	+	0	+
	Energy use	Use of fossil fuels	+	0	+
		Energy use	+	0	+
	Water use	Water use	-	0	-
	Nitrogen emissions	Nox and NH3 emissions	+	0	+
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	++	+	++
		Contribution to reducing exceedance of standards in soil, water and air quality	++	+	++
Realisability	Practicability and enforceability (government)	Legal enforceability	0	0	0
		Practical enforceability	0		-
		Financial enforceability	-	-	0
		Indirect and/or long term costs	++	+	+

	Feasibility and enforceability (market)	Practicability practical	-	0	--
		Practical enforceability	-	0	0
		Economic feasibility	--	+	--

iA.b. alternative

This alternative has a strong focus on cleaning. As a result, many of the contaminants present in the relevant waste streams are removed from the cycle. Cleaning leads to clean materials, which can be applied freely as non-formed building materials. The amount of immobilisate is decreasing significantly.

The concentration of contaminants and off-cycle extraction are the most positive effects of this alternative. The contribution to the circularity target is relatively small. This is because this alternative is mainly a shift (compared to the reference situation) from one secondary building material (immobilisate) to another (cleaned, freely usable material). This shift in the composition of the flows produced by this alternative (a relatively large amount of clean, freely usable material and a small amount of immobilisate) is, on average, better than in the reference situation. This facilitates usage in the next cycle for the cleaned, freely usable materials. However, if only the (relatively small quantity) immobilisate is considered, the assessment is negative. This is because in this alternative, only the non-cleanable flows can be converted into immobilisate. In this situation, the characteristics of the immobilisates are relatively less favourable than those of the reference situation. However, together with the relatively high amount of cleaned material becoming available in this alternative, the assessment for the indicator ‘impact on the properties of the secondary materials’ is neutral.

Due to the increased commitment to cleaning, energy and water use is higher than in the baseline situation. For the market, this alternative is a clear option but the costs of treating and processing the waste streams will be increased. A secondary positive consequence of this alternative is that the market will have more certainty about the demand for cleaning capacity. This can contribute to increasing the market’s willingness to invest in waste-cleaning facilities. For the shorter (transitional) period, this alternative may result in insufficient cleaning capacity.

In this alternative, the amount of material to be deposited (compared to the reference) increases slightly. This is mainly due to the increase in the amount of cleaning residue to be landfilled. The increase in landfill is negative in relation to the landfill reduction goal, but positive because landfilling leads to long-term (in principle perpetual) contamination being kept out of the environment. Concentration of contaminants in a landfill reduces risks to people and the environment.

iA.c alternative

This alternative imposes restrictions on immobilisation. Immobilisate can only be used if it remains in the long-term view. As such, this alternative has no further restrictions or provisions on cleaning or immobilisation.

It is therefore expected that in this alternative, the most obvious choice is to create an immobilisate in cases where it is relatively easy to identify the immobilisate. As this is likely to be simpler and cheaper, even if measures are needed, immobilisation remains attractive and the shift from immobilisation to cleaning (in relation to the baseline) is small. The difference from the baseline regarding the proportion of cleaning versus immobilisation is therefore small. As with alternative iA.b, the contribution to the circularity target is relatively small. This is because this alternative is expected to have a small shift (compared to the reference situation) from one secondary building material (immobilisate) to another (cleaned, freely usable material).

In this alternative, it is relevant how long-term visibility is achieved. Various variants have been identified for this purpose. Setting up and maintaining a registration system is an option. This can work well in principle, but requires a careful and robust (and long-term guaranteed) approach. In this variant, there are no restrictions on the works where the immobilisates may be used. As a result, immobilisates can be present ‘everywhere’. This makes the system vulnerable. The other variants (logically combined with a registration system) involve limiting the use of immobilisates to recognisable applications (e.g. noise barriers) or in specific large works. In the future, these variants will reduce dependency on a registration system, as they can take into account the possibility of the presence of immobilisates (containing any contaminants contained therein).

The added value of this alternative is particularly relevant for the longer term. The image of materials containing contaminants reduces the risk of spreading contaminants at the end of the cycle of use compared to the baseline situation. This may also help to reduce the long-term costs for the public sector compared to the baseline situation. As the ratio of cleaning – immobilisation does not change much compared to the baseline, there is little difference in the environmental effects compared to the baseline. The impact of this alternative on practicability (government) and feasibility (market) is neutral to slightly negative. The latter is due to the much greater effort needed to keep track of the alternatives. These are mainly in the public administration and, to a lesser extent, in the market.

Taken together, this alternative seems to consist of fairly easy-to-implement measures that can have a positive impact on environmental quality in the longer term. This is due to a higher level of assurance that pollutants will not be spread into the environment after the end of the period of use. This alternative could be characterised as a no-return measure: the effort is relatively small, but there is a positive impact. What is important, however, is that a robust system must be in place to keep the immobilisates in the image.

This alternative leads to less significant investment in cleaning capacity (compared to alternative IA.b). However, an incentive can be expected to develop systems and techniques aimed at keeping immobilised waste on a long-term basis.

iA.d alternative

Alternative iA.d is to some extent similar to alternative iA.b. There is a shift (compared to the reference situation) from one secondary building material (immobilisate) to another (cleaned, freely usable material).
In iA.d, cleaning is less compulsory, but in practice this alternative may mean that cleaning is de facto the only realistic option. It is important to note the quality (nature, complexity and concentrations of contaminants) of waste streams and the efforts (costs) required to clean materials to achieve the maximum permitted deviation or to achieve the standard of free application, and how the costs of any additional cleaning step relate to the costs of immobilisation.

Alternative iA.d is more complex in terms of image and rating than alternative iA.b. The cleaning obligation is less rigid than in alternative iA.b. As a result, the positive effects on the quality of the materials and on the risk of spreading contamination in the environment are also somewhat less positive than in iA.b.

Alternatives compared

With regard to the effects on the target range (consumption of raw materials, reduction of landfilling and incineration and emissions), the differences between the three alternatives are relatively small and in comparison with the baseline situation. This is due, in the case of alternatives iA.b and iA.d, to a shift within the secondary raw materials (from a relatively large immobilisate to a relatively high amount of clean and freely usable material). In alternative iA.c, this shift is less prevalent, with the expectation that keeping ‘recognisable’ is a (financially) more attractive option for the market than cleaning.

The main added value of the three alternatives compared to the reference is to remove contaminants from the cycle. This has been assessed in terms of risks to people and the environment. Alternative iA.b is the most effective in terms of cleaning and, to a lesser extent, of iA.d. For both of these alternatives, the impact is largely already observed in the first step in the chain. In these alternatives, contaminants are largely removed from the cycle and destroyed by storage in a controlled landfill. The result is, moreover, that the amount of material to be landfilled increases.

Alternative iA.c., the indicator ‘risks to people and the environment’ is a delayed impact: keeping the immobilised waste material in the image reduces the risk of it later entering the environment. Unlike alternatives iA.b and iA.d, the contaminants remain in the system. This means that there is still a risk of spreading in the environment in the future. This can be limited by setting rules for application (e.g. allowing application only in specific works or projects) and establishing and maintaining a registration system.

Looking at the other environmental impacts, it can be observed that alternatives iA.b and iA.d require more efforts. This can lead to increased energy and water use and emissions. However, overall there is a positive impact on CO2 emissions due to the reduced use of cement.

All three alternatives are feasible for the administration, but the market requires efforts. Alternative iA.b is the largest due to the cleaning requirement and the smallest due to alternative iA.c., as efforts can focus on keeping immobilised waste material ‘visible’.

For the longer term and given the goals behind it (limiting the use of raw materials and maximising the extraction of contaminants), alternatives iA.b and iA.d are more positive than alternative iA.c. It is important to note that these alternatives are an incentive for the market to achieve cleaning capacity.

7.1.2 Possible combinations

The CMP builds on the policy considerations of immobilisation. This EIA provides input for this. It is conceivable that combinations of the alternatives considered could be made. For example, a combination of two or more alternatives could achieve the best possible target and minimise impacts. These sections deal with possible combinations of alternatives. In addition, possible adjustments within the alternatives are considered to increase feasibility.

Combination iA.b and iA.c

The effect of alternative iA.b. is that the amount of immobilisate will decrease considerably compared to the baseline situation. Only those materials that cannot technically be cleaned can be converted into immobilisate under this alternative. These materials are likely to contain and contain relatively high and/or complex contamination, as this may be the reason why cleaning is not possible. In the longer term, those immobilisates may present a risk of spreading contaminants at the end of their useful life. In order to reduce that risk, it is desirable to keep these immobilisates visible, in accordance with alternative iA.c. A combination of the alternatives iA.b (cleaning requirement) and iA.c (visual requirement) is therefore obvious.

As indicated above, alternative 1A.c offers several options for the image of immobilisates (containing contaminants). A robust and simple system, with as few dependencies as possible on techniques and systems, is preferable in the long term. From this point of view, an arrangement whereby immobilisates can only be used in certain types of works (such as noise) or in specifically large works (such as a large business park). This will make it easier for future generations to find immobilisates if necessary. Another advantage is that it also improves the opportunities for monitoring the possible spread of contaminants.

Combination iA.b and iA.c with a more flexible cleaning requirement

Alternative iA.b sets the bar very high – always clean when technically possible. In practice, this can cause problems because cleaning can be very costly or because cleaning capacity is not (yet) available.

Consideration may therefore be given to a combined alternative in which the requirements of Alternative IAb are relaxed, under the condition that the image of the immobilisates (iA.c) is retained. Here, the cleaning requirement (from alternative iA.b) is made less strict, for example by also taking into account the cleaning costs and/or the availability of cleaning capacity. This may also include flexibility and/or a phased approach to enable and encourage technical developments. For materials for which immobilisation is still possible in this case, the image of the immobilisates requirement is imposed. In this combination of iA.b and iA.c (image requirement), relaxing the cleaning requirement (iA.b) does not necessarily lead to immediate risks to humans and the environment.

Combination iA.b and iA.d

A combination of the alternatives iA.b and iA.d is less obvious. Both alternatives are subject to cleaning obligations. However, in the case of alternative 1A.d, this is only relevant for materials with concentrations of contaminants above the maximum permitted deviation. A combined alternative is likely to lead to the same situation as iA.d.

Combination iA.c and iA.d

Alternative iA.d is expected to produce more immobilisates than alternative iA.b, but the concentrations of contaminants are lower due to the maximum permitted error. As a result, for alternative iA.d., the image of the immobilisates adds relatively little to reducing the risk of dispersion of environmental pollutants at the end of the immobilisate’s useful life. On the other hand, if the image requires a relatively small effort, keeping immobilised waste material on the image contributes to further reducing the risk of the spread of contaminants.

7.2 Use as a payment unit (PLU)

7.2.1 Full assessment

Chapter 6 of this report describes the effects of the alternatives to 'Using as a aggregate' and tabulates them for each alternative. An overview of this assessment is presented in Table 7.2.

Table 7.3 presents the main findings on how alternatives will be developed in practice. Based on the assessments in Chapter 6, an assessment per sub-objective or aspect has been made against the reference. This has been done for each alternative. These assessments are graphically shown for the three alternatives in Figure 7.2; recorded after section 7.3).

Table 7.2: Overview of assessments

	Efficient use of resources	Use of primary raw materials	0	0	0
		Ratio of renewable – non-renewable raw materials in products	0	0	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	0	0	0
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	+	0	+
		Share/percentage of substances moving to a lower level in the waste hierarchy	0	0	-
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	0	0	+
		Returnability	0	+	+
		Workability	0	0	+
	Contribution to landfill/incineration restrictions	Landfill volume per year	-	0	--
		Amount of incineration per year	0	0	0
Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents)	-	0	-
	Energy and water use	Use of fossil fuels	-	0	-
		Energy use	-	0	-
		Water use	-	0	-
	Nitrogen emissions	Nox and NH3 emissions	-	0	-
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	++	+	++
		Contribution to reducing exceedance of standards in soil, water and air quality	++	+	++
Realisability	Practicability and enforceability (government)	Legal enforceability	0	0	0
		Practical enforceability	0	-	+
		Financial enforceability	-	-	0
		Indirect and/or long term costs	++	+	+

	Feasibility and enforceability (market)	Practicability practical	0	0	-
		Compliance with practical	-	-	0
		Economic feasibility	-	+	-

iB.b. alternative

In this alternative, it is stated that cleaning is necessary if technically possible. As a result, the use of raw materials is on balance approximately neutral. While there is a shift, assuming that there is demand for moulded building materials and that aggregates are necessary for their production, the availability of more clean aggregates results in and shifts.

The most important (positive) effect of this alternative is to de-cycle and keep contaminants out of cycle. This alternative results in materials that can be recycled relatively easily and without risks after the end of their service life. It should be noted that material that cannot technically be cleaned (under conditions) can still be used as a building material. It can be expected that this material is relatively highly contaminated and/or contains a wide diversity of impurities. The positive environmental impacts are balanced by the fact that, alternatively, more effort is required from the market than in the baseline situation. ‘Competition’ also arises between the use of cleaned and non-decontaminable substances. There are also limited negative impacts on energy and water use and emissions.

iB.c alternative

In this alternative, the incentive to clean is less pronounced than in alternative iB.b. It is expected that the image of the material can be relatively simple for formed construction materials. In the short term, this may result in the possibility of continuing to apply contaminated material (within the rules) as an additive. This means that pollutants (longer than in the case of iB.b. alternative) remain in the cycle.

Due to the relatively good traceability of the construction materials, this results in a high probability that materials are recycled properly at the end of the cycle, but on the other hand, a high proportion of contaminated materials can still be used as aggregates. Moreover, the relative ease of reference implies that the additional effort and cost incurred by the market is also limited. This can be done, for example, by marking pillars, etc., where these aggregates have been used. Together, this alternative can be seen as a no-return measure that can also be properly combined with alternative iB.b.

Alternative iB.d

Alternative iB.d can be considered to be the most far-reaching of the three alternatives. The strict requirements for using additives make cleaning necessary. The target achievement would be even greater if landfill were no longer possible. It should be noted, however, that there are flows which are used as additives and which cannot be easily decontaminated due to the specific contamination.

As a result, this alternative will have the greatest impact on de-pollution. The postponement of removal from the chain (which applies to alternative iB.c and to some extent to alternative iA.b) is also not relevant. Moreover, these rather strict requirements mean that the feasibility for the market has been assessed negatively against the baseline.

Compared to the baseline situation, due to the increased cleaning effort, this alternative leads to a somewhat higher use of energy and water and an increase in the amount of cleaning residue to be landfilled.

7.2.2 Possible combinations

In considering the alternatives above, it has been indicated that in alternative iB.b it is still possible to use impurities in formed building materials. This means that there is a risk that pollutants may be dispersed in the environment at the end of the service life of these materials. A combination of iB.b. and iB.c. can reduce this risk. This may be combined with a nuance of the cleaning requirement included in alternative iB.b., for example by linking to clean-up costs and/or to the actual availability of cleaning capacity.

Alternative iB.d. alone already significantly reduces the risk of dispersion of environmental pollutants (compared to the baseline). An image addition adds little weight here. A combination of the alternatives iB.d and iB.d is also not logical.

7.3 Immobilisate and application as aggregates in conjunction.

In this partial report, the alternatives to immobilisate and use were considered separately from each other. Initially (in the original NRD), this distinction had not yet been made. For both routes (immobilisation or use as an aggregate), this use is not an end in itself, but a means of responsibly recovering contaminated materials. From the underlying objective of the CMP, preference should be given to working towards a situation where impurities should be kept off the cycle as much as possible and secondary raw materials in the cycle as much as possible. These goals may be frustrated if a coherent policy is not implemented.

It is clear that the materials covered by these topics overlap. This means that for a number of materials, processors may have the option of immobilising or using it as an aggregate (not all substances). For those materials where this choice exists, it is therefore important for their final impact in practice how the regulations immobilise and apply as an aggregate. The matrix below provides an overview of the possible combinations of the alternatives, including a forecast of how the combination will work in practice.

In view of the link in practice between the alternatives for the two sub-topics and the picture given below, it is necessary to keep the regulatory framework as similar as possible for both topics.

Table 7.4: Overview of the alternatives to the iB use as an aggregate and their impact on the ground

		• interaction not dependent • cleaning requirements equal • no escape, back and forth	use as a 'in-image' additive for materials for which cleaning is relatively costly	• No interaction in fact • both require cleaning
		Choice of use as immobilisate that can be visualised, instead of cleaning to applicability as a single additive	Little influence/dependence	Choice of use as immobilisate that can be visualised instead of cleaning to applicability as a single additive
		• Cleaning required, and various possible applications (aggregate building material, immobilisate, aggregate) • Depending on the concentration, the use in immobilisate can be chosen in cases where it is cost-effective and possibly considering the Degree of Contamination	Depending on the concentration of contaminants, select aggregate for a use that can be visualised or apply (if possible) in immobilisate without cleaning	• Cleaning required • Use as a aggregate only for clean material, i.e. equal to (clean) primary raw materials • For materials with a composition between Bbk and maximum deviation (for use in immobilisate), the incorporation into immobilisate is optional and cannot be used as an aggregate. This is probably at most a small quantity

Table 7.44: Overview of alternatives in section iA on Immobilisation and how they will work in practice

	Share of total offers cleaned	• Getting bigger than in the baseline situation • In principle, everything is cleaned; • Assuming cleaning techniques exist; • For a large number of streams, it is not important that these techniques are (partly) expensive and/or that actual or insufficient cleaning capacity is (currently) available	• Possibly slightly larger than in the baseline situation. • Materials for which 'image-bearing' cannot be guaranteed should be cleaned • And if that is not possible: landfilling	• Getting bigger than in baseline • Immobilise only relevant for materials that can be immobilised without cleaning (i.e. concentrations between Bbk and maximum permitted error). • Materials in excess of the maximum permitted error require cleaning. • Depending on costs, cleaning and subsequent immobilisation may be chosen. This depends on the cleaning costs (and especially the final step to reach BBK). Or for cleaning up to desired concentration. • In addition, if there is no other processing option, the data goes missing
	What is paid in?	Cleaning residue	Cleaning residue	Cleaning residue
	Share of total supply sent to landfill	More cleaning residue than in reference	More cleaning residue than in reference	More cleaning residue than in reference
	Concentration of contaminants in immobilisate	For the (possibly small) part for which immobilisation is allowed, it can be assumed that these are relatively high and/or difficult to remove impurities.	No material difference; image is not correlated with contaminants	On average lower because of the indicated maximum limit
	Share of pollutants removed from the cycle	Bigger than in the reference situation	Slightly larger than in the reference situation	Bigger than in the reference situation

	Risk of spread of contaminants	Smaller than reference, as most of the contaminants are removed from the cycle and there are fewer immobilisates	Less than reference by ensuring careful treatment at the end of the cycle	Less than reference because immobilisates contain fewer contaminants and fewer immobilisates are made and used
	Pollutants at the end of the cycle			
	Investments	Greater security of supply and sales contributes to increased willingness to invest in cleaning facilities	• Impact on the supply of clean materials is relatively small • Investments more focused on 'Image-Keeping' systems and techniques	Greater security of supply and sales contributes to increased willingness to invest in cleaning facilities

Table 7.4: Overview of alternatives to section iB Use as an aggregate and its impact in practice

	Share of total offers cleaned	• Getting bigger than in the baseline situation • In principle, everything is cleaned; • Assuming cleaning techniques exist; • For a large number of streams, it is not important that these techniques are (partly) costly and/or that cleaning capacity is (currently) not available or not sufficient	• Possibly slightly larger than in the baseline situation. • Materials for which 'image-bearing' cannot be guaranteed should be cleaned • And if that is not possible: landfilling	• Getting bigger than in baseline • Cleaning is required for materials that do not meet compositional requirements. • Cleaned material subsequently applicable as a aggregate (instead of primary raw materials) • In addition, if no other processing option is available, landfill
	What is paid in?	Cleaning residue	Cleaning residue	Cleaning residue
	Share of total supply sent to landfill	More cleaning residue than in reference	More cleaning residue than in reference	More cleaning residue than in reference
	Concentration of contaminants in formed building material	For the (possibly small) part still authorised as a aggregate, it can be assumed that these are relatively high or hard to remove impurities.	No material difference; images are not correlated with contaminants	Smaller due to composition of requirement
	Share of pollutants removed from the cycle	Bigger than in the reference situation	Slightly larger than in the reference situation	Bigger than in the reference situation
	Risk of spread contaminantsat the end of cycle	• Smaller than reference, as most of the contaminants are removed from the cycle • How many contaminated aggregate material is smaller than in reference, but probably higher (average) than contaminants	Less than reference by ensuring careful treatment at the end of the cycle	• Less than reference due to the absence of contaminants in formed construction materials • Also smaller than iB.a. because technically non-decontaminable substances can still be used as an additive
	Investments	Greater security of supply and sales contributes	• Impact on the supply of clean materials is	Greater security of supply and sales contributes to

		to increased willingness to invest in cleaning facilities	relatively small • Investments more focused on 'Image-Keeping' systems and techniques	increased willingness to invest in cleaning facilities
				'Competition' between deployment that is cleanable and nieutremisable substances, where the last group has a negative cost and image

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Circular Materials EIA plan

Partial report 2: care substances

Antea Group

Understanding today.
Improving tomorrow.

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Circular Materials Plan EIA

Partial report 2: care substances

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1. Introduction

1.1 Circular Materials Plan 1

The current National Waste Management Plan (LAP3) expires at the end of 2023 and will therefore be revised. This revision is accompanied by a shift in emphasis. The LAP focused on good waste management, while the (first) Circular Materials Plan (CMP1) increases the ambition to retain raw materials for as long and as long as possible and to reduce the use of primary raw materials as much as possible. The CMP is therefore more in line with the transition towards a circular economy than the LAP3.

The environmental impact assessment procedure and the environmental impact assessment (EIA), as a product, provide an objective picture of the environmental impacts of a number of policy choices. The EIA is a separate product from the CMP. The EIA provides information enabling the CMP policy choices to be made.

Six policy options examined their environmental impacts and included them in six separate sub-reports. The overall environmental impact assessment (EIA) has been prepared on the basis of these sub-reports.

The study of the functioning of the alternatives and their possible impact involved, for example, drawing on the knowledge and experience of a number of experts in the form of an expert team consulted several times. Where specific information from (members of) the expert team has been used, this is explicitly mentioned. The use of the expert team’s input has been further detailed if necessary.

The content of this report is the responsibility of the authors.

This sub-report 2 covers the Health Care Section. The topic Zorgstoffen and the question on this in the context of CMP 1 are not well suited to an EIA-like study like that done for other topics (in the other sub-reports). The main reason for this is that substances of care as such, but especially the waste streams in which substances of concern may be present (substances of care – waste combinations), form a very heterogeneous group. The commitment of the State to healthcare substances is to create a specific policy only where it is necessary. The need arises from the reduction to an acceptable level of the risks that substances of concern may pose if they remain in the cycle from the waste they are present in. Such a policy may consist of the introduction of a specific minimum standard for a given substance/waste combination. A generic assessment of this commitment by the State in a planEIA is not possible. Indeed, the target range and the environmental impact will vary between waste substances. Therefore, this sub-report 2 contains only an approach and an image of the range of the target and impacts ranges. The assessment framework used is the same as that for other topics in the EIA.

1.1 Questioning of the Substances of Concern section

In addition to the baseline situation (II.a), the NRD includes one alternative for this subsection:

> II.b Formulate policies for the treatment of specific substance/waste combinations in the respective chain or waste management plans (including for non-SVHC-containing substances).

This alternative is also intended to assess whether substances of concern (not covered by the SVHCs) pose risks to health and the environment when recycling or recovering material from waste streams. This may be the case if substances of concern remain present in secondary materials resulting from the treatment of waste, which may pose risks to humans and the environment in the application of the materials, the use of the secondary materials as raw materials for new products and/or at the end of the period of use of the secondary materials concerned. If these risks are considered too high, the policy may focus on removing them from the cycle. This implies that for specific substance/waste combinations, a certain method of processing is referred to as the minimum standard.

The question is how the reference situation, where this is not the case, relates to alternative II.b. In other words, does the expansion of the current policy (focusing on SVHC risks, with only very limited attention in the LAP3 on non-SVHC care substances) towards a policy that focuses on a wider range of non-SVHC care substances lead to a positive environmental outcome?

The policy intention (the alternative), in relation to waste, is to expand the SVHC policy to include policies for specific substances of concern/waste combinations in the respective chain or waste management plans. This topic relates to a large and heterogeneous volume of substances of care and an unknown number of combinations of substances of care and waste for which the introduction of a separate minimum standard will be considered desirable (in due course). This implies that generic policies have little effect in themselves; effects will only be produced by further concretisation for certain substance-waste combinations. The focus is on:

- The extraction of substances of concern requires treatment. In general, what are the methods related to categories of substances of concern?
- What does this treatment mean for the possibilities of rendering (cycle-wise) the remaining material useful?

1.2 Synopsis

Chapter 2 explains the assessment framework and methodology. Chapter 3 explains the policy on healthcare substances and analyses options for processing/separating healthcare substances. Section 4 describes the assessment.

2. Assessment framework and methodology

2.1 Assessment framework

The assessment framework is included in the NRD for this EIA. Following the input and advice received on the ETD, some adjustments have been made to the assessment framework and have been incorporated in the final ETD[140].

In the context of the preparation of this EIA, the evaluation framework was further elaborated and some adaptations were made to the study and to the expert meetings related to this topic.

The main changes made to the assessment framework in the NRD are:

1. A level of aggregation has been added and the aspects and sub-targets are below that level. This leads to a two-topic format focusing on objectives and target ranges, respectively on circularity target and landfill and incineration target range, on environmental impacts and on feasibility.
2. In the target achievement topics, the second level of aggregation consists of sub-targets and in the topics of environmental impact and feasibility the second level of aggregation consists of aspects;
3. Some aspects are formulated in a slightly different way than in the NRD, e.g. in the case of raw materials, all raw materials (and not only renewable ones) are considered, but the ratio of renewable and non-renewable attention is paid to;
4. The feasibility theme has been divided into feasibility (involving the government) and feasibility (how market players can deal with the measures included in the alternatives); this difference between the government and the market is important in making the assessments of how the alternatives will work in practice. This is because businesses operating in the market play an entirely different role to that of public authorities. This is because operators make daily choices about the way materials are processed (cleaning or immobilisation), but also make choices about investments in treatment and processing capacity.
5. Some aspects have been added, namely energy use, water use and consumer market.

This leads to the assessment framework as shown in Tables 2.1 to 2.4. This classification, comprising four topics and a total of 11 sub-objectives and aspects, was also used in the summary assessments of the alternatives. A higher number of indicators have been identified under the sub-targets and aspects. These are not considered as such in this sub-report.

Table 2.1: Circularity sub-targets and indicators

	Efficient use of resources	Efficient use of primary raw materials
		Ratio of renewable – non-renewable raw materials in the cycle
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level
		Share/percentage of substances moving to a lower level in the waste hierarchy
	Impact on properties of	Applicability

140 Reaction Note on Views – NRD for Environmental Impact Assessment for the Circular Materials Plan; Ministry of Infrastructure and Water Management, January 2023

	secondary materials, including in any subsequent cycle of recycling	Returnability
		Workability

Table 2.2: Sub-targets and indicators for landfilling and incineration

	Contribution to landfill/incineration restrictions	Landfill volume per year
		Amount of incineration per year

Table 2.3: Environmental impact aspects and indicators

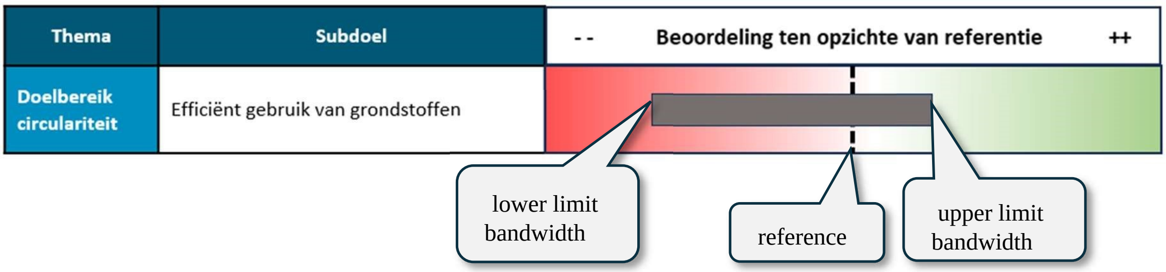
Environmental impact	Greenhouse gas emissions	Emissions (in CO_2 equivalents)
	Energy use	Use of fossil fuels
		Energy use
	Water use	Water use
	Nitrogen emissions	NO_x and NH_3 emissions
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere
		Contribution to reducing exceedance of standards in soil, water and air quality

Table 2.4: Aspects and indicators realisability

Realisability	Practicability and enforceability (government)	Legal enforceability
		Practical enforceability
		Financial enforceability
		Costs for the public administration, direct and indirect and/or longer-term
	Feasibility and enforceability (market)	Practicability practical
		Practical enforceability
		Financial enforceability
		Economic feasibility

2.2 Assessment methodology

Unlike the other partial reports, this partial report did not include an assessment in the form of plussen and minnen. Instead, a graphical range is included. This range illustrates the range of target ranges and effects that may occur for substance-related waste combinations. This is an explicit, ‘high-pass’ qualitative assessment.
The example below shows the approach. In this example, the bandwidth is mainly in the negative, i.e. worse than the baseline. In some cases, however, there may also be positive effects (substance of concern/waste combination with the minimum standard to be introduced for that purpose).



3. Health care substances

3.1 Overview

3.1.1 What are substances of concern?

Substances of concern are substances that may (in the long term) cause irreversible effects on human health and the environment. Some of these substances have been identified as substances of very high concern (SVHCs).

A substance is classified as a substance of very high concern (SVHC) in the European Chemicals Policy if it has one or more of the following properties: a. carcinogenic (C);
b. mutagenic (M);
c. toxic to reproduction (R);
d. persistent, bioaccumulative and toxic (PBT);
e. very persistent and very bioaccumulative (vPvB); or
f. another characteristic giving rise to a similar level of concern[141].

These selection criteria for substances of very high concern are laid down in Article 57 of Regulation (EC) 1907/2006, REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals). Healthcare substances do not meet the above criteria.

The Circular Economy Policy aims to obtain as many materials/secondary raw materials as possible from waste, unless such secondary raw materials contain impurities or substances of concern that make the recovery of those

141 LAP3, Part B.14 Substances of very high concern. (2021)

materials undesirable. This may be the case if, through leaching or by other means, substances of concern may spread from materials into the environment and thus pose a risk to humans and ecosystems. In such cases, the waste containing the care cannot be recovered and the waste must be removed from the cycle and kept.

3.1.2 Overview of Substances of Concern

The sub-topic of substances of concern other than SVHCs in the CMP for the CMP focuses on waste/residual streams and does not concern prevention (e.g. ban on pesticides) or collection (e.g. mandatory surrendering of unused medicines).

For substances of concern, this subreport distinguishes a number of categories, derived from a study by RIVM which contains a proposal for a further inventory of substances of concern in waste[142]. Based on the RIVM analysis, it can be observed that the presence of substances of concern is relatively high in certain types of waste. Environmental Management Compliance Policies can target those wastes that are known to have a (relatively high) probability of their presence. The RIVM report identified 9 substance groups. For a number of substance groups, the Memo suggests that they should not be taken into account further in the CMP exploration. Seven of the substance groups identified are briefly considered below. It draws on the RIVM study

Pathogens

Microorganisms are naturally found in our environment, as well as in urban areas (e.g. waste water) and industrial waste streams (e.g. offal) and on consumer products. Pathogenic variants include micro-organisms such as viruses, bacteria, fungi and parasites. There are several rules for the application of materials that are or may be contaminated with pathogens. Microbiological guidelines and standards are applicable to toys, cosmetics and natural food, but not to all products. For example, paper is not subject to microbiological requirements. This may pose a risk when reusing toilet paper from wastewater, in the absence of risk mitigating measures. There are also residual flows that are not currently reused due to microbiological risk, for example residual flows from hospitals and other healthcare facilities. The management of microbiological risks will have to be considered when such residual flows can be reused.

The main sources of microbial hazards are biotic flows. However, waste streams generated after intense contact with vectors of pathogens can also be contaminated, for example diapers and mattresses or other waste from care.

Pathogens can be made harmless by heating, UV light, gamma-ray and possibly also by biodegradation and other processes. It is not expected that the removal of pathogens from waste streams will be feasible or impossible.

Drug residues

Drug residues can be present in certain wastes, in wastewater and in sewage sludge. In the environment (e.g. in surface waters), drug residues may have unwanted effects.

Drug residues, mostly organic compounds, can be destroyed by heating.

Pesticides (biocides, plant protection products)

Pesticides include plant protection products and biocidal products. Plant protection products are applied to agricultural crops and plants in gardens and the public area. In addition to pest control (rats and mice, insects), biocides are also used for disinfection, preservation and antifouling. Pesticides are assessed for both effectiveness and risks to humans and the environment under the relevant European legislation (the Biocidal Products Regulation (BPR) and the Plant Protection Products Regulation (PPPR)). Pesticides may be authorised by the Plant Protection and Biocidal Products Authorisation College (CTGB) or the European Authorisation Authority if the risks are considered acceptable. This risk assessment looks at both hazard properties and exposure. A subsequent lifecycle of products that may contain pesticides or their residues is not considered. There are, however, provisions on, for example, the disposal of packaging of insecticides and the recycling

142 RIVM, 2023: Memo Suggested type of care substances for CMP. Moreover, this Memo does not contain a definition of the concept of care substances.

of preserved wood (separate collection and no recycling). The authorisation of organic fertilisers or co-digestion materials in manure is subject to an assessment focusing on the risks from pesticides, among others, under the responsibility of the Fertilisers Act Expert Commission (CDM). It also looks at metals, organic contaminants, and other relevant substances that may be present based on their origin (Faber & Montforts, 2022).

The presence of (residues of) plant protection products is mainly expected in biotic residual flows and of biocidal products in abiotic waste streams (materials). For plant protection products, this is the main focus

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flows originating from agriculture, forestry and other crops (e.g. cut flowers), but also from the food industry and textile industry (plant-based raw materials). In addition, there are still biotic flows from households (VGF) and from pruning waste.

For biocides, there is a wider range of applications and therefore waste streams in which they can be present. These may include (bio-based) building materials, plastics, paper, textiles, carpets, mattresses, furniture, preserved wood, cooling liquids, metal working fluids, fuels, corrosion-resistant metals or ship skins with antifouling. Biocidal products used for disinfection or pest control are expected to remain less present on materials that are recycled.

Pesticides can be rendered harmless by heating and, in part, also by biodegradation processes. There do not seem to be any useful uses for pesticides, in case they can be disposed of from waste. Some pesticides contain (heavy) metals that can be recovered. However, the quantities involved are relatively small.

Radioactive waste is not covered by environmental policy, but by radioactive substances/radiation protection policy. At low concentrations, radioactive substances may be present in certain wastes. Due to the separate legal framework, radioactivity in the CMP is not considered. Radioactivity is not included in the assessment made in this partial report (Chapter 4).

PFAS

Per- and polyfluoroalkyl substances (PFAS) are a very large and very diverse group of organic compounds with essentially a carbon chain with fluorine and possibly other groups. PFAS are very persistent (they do not break down or die very slowly), can spread in the environment and accumulate in food chains. They are harmful in the environment and in organisms. Degradation products may also be toxic. PFASs have had and have many applications and are widely spread in the environment, such as water and land soils, and also in waste, at low concentrations. There are no specific substance-waste combinations in relation to PFAS yet.A number of PFAS are SVHC, a large part of them not (yet).

PFAS are poorly degradable. Destruction is possible by heating and for some PFAS (slow) through biodegradation processes.

Heavy metals

Heavy metals are the collective term pre-metals with a high atomic mass, such as cadmium, chromium, cobalt, copper, mercury, lead, manganese, nickel and zinc. These metals are natural elements, often toxic and non-destructive. They are found (in low concentrations) in the natural environment and therefore also in food. They are also contained in a variety of products. Some metals are harmful at exposure and at excessive concentrations and/or in certain chemical forms and as part of chemical compounds. A number of heavy metals have been classified as SVHCs, but copper, manganese and zinc, among others, are not. A number of heavy metals are necessary – in very small amounts – for the metabolism of flora, fauna (and humans).

As heavy metals are contained in many different products, the use of metals in products is regulated by different laws and regulations, including:

- Fertilisers Implementing Decision: determines a maximum permissible load to be added to heavy metals from fertilisers into soil

- REACH Regulation (1907/2006/EC): on which heavy metals (and in what quantity) may be contained in textiles and jewellery, among other things.

Microplastics

Microplastics are very small plastic particles smaller than 5mm. They are widespread in the environment. The origin is partly the use of microplastics in products (such as care products) and partly as a product of the breakdown of plastic products. Microplastics can be harmful to the environment in organisms. The rate of degradation of microplastics in the environment is generally slow.

Options for destroying microplastics consist mainly of heating (incineration). Removing microplastics from and separating them from waste is practically not possible.

Properties of substances of concern

Properties of the substances of concern are important for the assessment of target achievement and effects. These properties define the techniques to be used to render the substances harmless. To this end, a global overview of the relevant characteristics is provided in Table 3.1.

Table 3.1 Relevant properties of substance groups of substances. The numbering is derived from RIVM reporting

1	Pathogens	Very diverse	Diverse, but also low concentration, risk	Low but dependent on waste	Yes: killing the pathogens by heating, burning, UVlight, etc.
2	Drug residues	Very diverse	Diverse, but also low concentration risk	Small but dependent on the nature of the waste	Yes: incineration
3a	Pesticides: Biocidal products	Very diverse	Diverse, but also low concentration risk	Small but dependent on the nature of the waste	Yes: incineration
3b	Pesticides: plant protection products	Very diverse	Diverse, but also low concentration, risk	Small	Yes: incineration (but may also contain (heavy) metals)
4	Radioactive substances	Very diverse half-life	Small	Small	No
5c	PFAS	Diverse, but partially very persistent Breakdown products may also be a risk	PFAS are very diverse. Breakdown products may be more mobile than the original molecules	Small	Yes: incineration or possibly (very slow) degradation by biological processes
5d	Heavy metals	None	Very diverse, including due to reactions with other connections	Various techniques available to extract heavy metals from materials; different by metal (group)	No
5th	Microplastics	Very slow	Diverse, depending on the waste	Incineration	Incineration

3.2 Substances of care in waste streams

As described above, the substances of concern form a very large and heterogeneous group of substances. These substances may be present in a wide range of waste types as well. It is waste with a very diverse composition, characteristics and potential in terms of the possibilities of transforming the waste into a secondary raw material. Figure 3.1 gives an impression of this diversity.

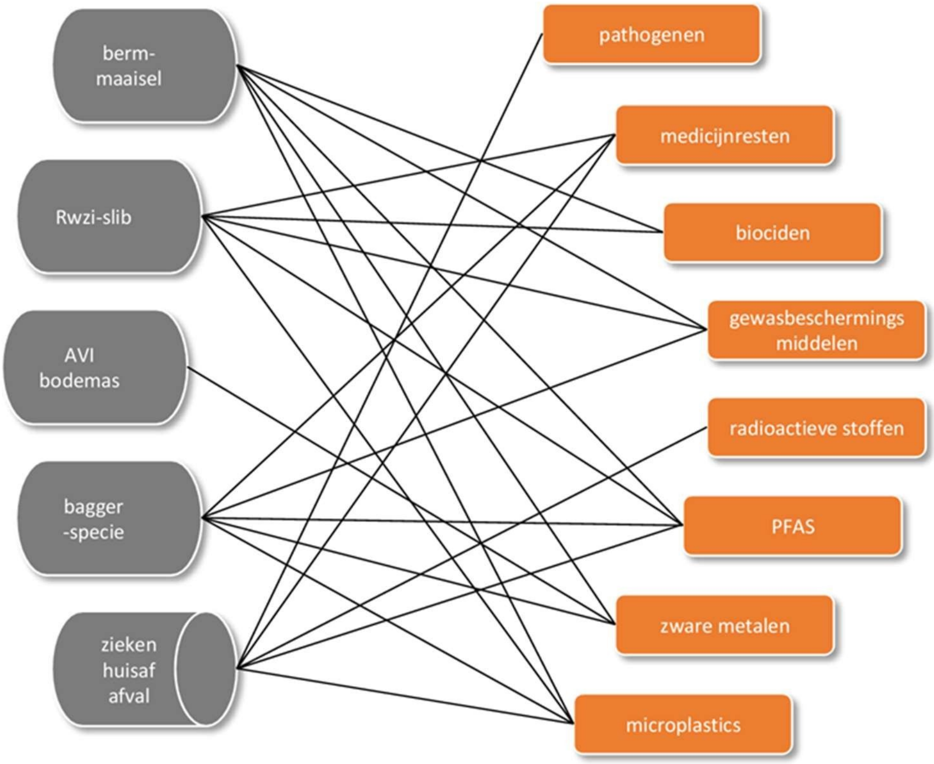

Figure 3.1: Picture of the diversity of the possible presence of substances of concern in waste

4. Assessment

4.1 Evaluation

The actual impact on the target achievement and impact that the alternative will have (compared to the baseline situation) is determined by:

- for which substance/waste combinations a minimum standard is included in the policy;
- the properties of the respective substance/waste combinations;
- the volume of the respective substance/waste combination (in tonnes per year);
- the criteria (such as the concentration limit) to be applied when prescribing the minimum standard for the respective substance/waste combination.

In view of all these variables, the assessment framework does not allow for a concrete assessment of the target achievement and impacts in the context of this EIA. However, what is possible is to indicate a range of target achievement and effects that may occur (Figure 4.1). This range can be based on a rough estimate of the target range and impacts that could occur when introducing a minimum standard for a number of substance-waste combinations, and these estimates can then be combined. The characteristics of relevant substances of concern, as listed in Table 3.1, may be used. These are the techniques that are necessary to achieve the intended result (removing the substances of concern from the cycle) and are therefore included in the minimum standard.

The overview presented in Table 3.1 shows that many substances of concern may require (a lot of) energy to render the substances harmless or to extract them from the waste. For many substances – waste combinations it is not possible to extract the substances from the waste. There are also cases where water and/or auxiliary substances (chemicals) need to be used to remove substances of concern from the waste.

Figure 4.1: Assessment of the alternative in relation to the baseline situation. The length of the bars represents the bandwidth in the assessment

Thema	Subdoel / Indicator
Doelbereik circulariteit	Efficiënt gebruik van grondstoffen
	Stimuleren van hoogwaardige verwerking van afvalstoffen
	Effect op de kwaliteit van secundaire materialen, ook bij een eventuele volgende recyclingcyclus
Doelbereik storten en verbranden	Bijdrage aan het beperken van storten en verbranden
Omgevingseffecten	Emissie van broeikasgassen
	Energiegebruik
	Watergebruik
	Emissie van stikstof
	Risico's voor mens en milieu door verspreiden van schadelijke stoffen
Realiseerbaarheid	Uitvoerbaarheid en handhaafbaarheid (overheid)
	Uitvoerbaarheid en handhaafbaarheid (markt)

Circularity target range

Efficient use of resources

As indicated above, many substances of concern are such that the techniques necessary to destroy or remove them from the waste lead to the waste itself not becoming usable or becoming less usable for a high-quality use as a secondary raw material. For example, care substances cannot be extracted from impregnated wood without the wood becoming unsuitable for secondary use. As a result, the quantity of secondary raw materials will decrease compared to the baseline situation.

Stimulating high-quality waste processing

This sub-objective of the circularity targets is to move waste to a higher level in the waste hierarchy, or to increase its use within the same level. Again, for this sub-objective, the techniques necessary to remove or destroy substances of concern will mean that in many cases a higher step in the waste hierarchy cannot be achieved.

Impact on the quality of secondary materials, including in a possible next cycle of recycling

Several aspects are relevant to this indicator. The introduction of minimum standards may reduce the quantity of secondary raw materials compared to the baseline situation. This is due to the techniques that need to be used to keep the substances out of the cycle. As the portion of the waste stream in question containing (relatively) high concentrations of substances of concern has to be treated in accordance with a minimum standard (per healthcare substance/substance combination), only

the relatively clean parties in the cycle remain. As a result, the average quality of secondary materials improves with a decreasing (possibly strong) quantity.
This is also important for the possible follow-up cycle of secondary materials remaining in the end-of-cycle.

Landfill and incineration target range

Contribution to reducing landfilling and incineration
For many waste substances combination (HCW), a minimum standard aimed at reducing the risks of the diversion of HCWs will consist of incineration and/or landfill (of the residues). Compared with the baseline situation, this amounts to an increase in incineration and landfill.

Environmental impact

Greenhouse gas emissions, energy use and nitrogen emissions
In many waste substances combinations, the techniques that must be used to defuse the substances and remove them from the cycle to use energy, which can also lead to emissions of greenhouse gases and nitrogen (oxides). The introduction of a minimum standard will therefore lead to an increase in the use of energy and higher emissions for many waste substances combined. The extent to which this is the case varies by substance/waste combination. This use of energy may be offset by the fact that the waste is incinerated with energy recovery, which can contribute to reducing the use of fossil energy sources.

Water use
Depending on the techniques specified in the minimum standards, the use of water may increase compared to the reference situation. Water may be necessary in cleaning processes for some healthcare dust/dust combinations.

Risks to man and the environment from spreading harmful substances
The reason for setting a minimum standard for care-waste combinations is to remove care substances from the cycle as much as possible. This reduces the risks to people and the environment from the distribution of the substances of concern. This positive effect occurs for each substance-waste-substance combination. Therefore, the assessment is (very) positive with a small bandwidth. To what extent the effect is positive depends on several factors already identified above (such as the concentration limit used).

Realisability

For the two indicators for this topic (Feasibility and enforceability (Government) and Feasibility and enforceability (Market)), it is not expected that there is a substantial difference with the reference situation. It is important for economic operators that sufficient processing capacity should be available for the techniques to be used in accordance with the minimum standard.

4.2 Conclusion

It is evident that setting minimum standards for care waste – in cases where there are risks that the care substances may spread in the environment and pose a danger to human health and the environment in the short or longer term – has a (strong) positive impact on the indicator ‘risks to people and the environment’, compared to current policies. The extent of the positive impact, and the time horizon, varies for each substance/waste combination. The effect of introducing minimum standards for certain waste care combinations is that the quantity of secondary raw materials will decrease, but (by removing the most contaminated batches) the average quality of secondary raw materials will improve.

On the other hand, for many waste care combinations, a minimum standard will reduce the target range for the other indicators compared to the reference situation and increase the environmental impact related to the use of energy, leaving aside exceptions.

In other words, increasing the target range for mitigating the risks may be associated with a decrease in the target range for the circular economy. This implies that the introduction of a minimum standard for a substance-waste-substance combination should be preceded by an analysis (LCA) analysing its advantages and disadvantages.

In fact, these conclusions are very much in line with the policy intention: this is not intended to be rigid, but rather aims to prescribe a treatment based on a balance between the target range and effects for certain types of care substance waste combinations (including a concentration threshold). This would only happen if overall the processing scores are expected to be positive. In the reference situation, care substances that are not SVHCs receive no attention (with the exception of diapers). In theory, the environmental impact of paying attention to certain substances of concern (the policy formulation) could never be negative, as regards the risk of spreading such substances into the environment. However, in addition to these environmental impacts, other aspects play a role, which, as also shown in the assessment above, can be negative. This can make trade-offs difficult.

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Circular Materials EIA plan

Part Report 3: Import/Export residue return

Antea Group

Understanding today.
Improving tomorrow.

project number 0483395.100
final revision v3.0
10 May 2024

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Circular Materials Plan EIA

Part Report 3: Import/Export; Residue recycling

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1. Introduction

1.1 Circular Materials Plan 1

The current National Waste Management Plan (LAP3) expires at the end of 2025 and will therefore be revised. This revision is accompanied by a shift in emphasis. The LAP focused on good waste management, while the (first) Circular Materials Plan (CMP1) increases the ambition to retain raw materials for as long and as long as possible and to reduce the use of primary raw materials as much as possible. The CMP is therefore more in line with the transition towards a circular economy than the LAP3.

The environmental impact assessment procedure and the environmental impact assessment (EIA), as a product, provide an objective picture of the environmental impacts of a number of policy choices. The EIA is a separate product from the CMP. The EIA provides information enabling policy choices to be made under the CMPs.

Six policy options examined their environmental impacts and included them in six separate sub-reports. The overall environmental impact assessment (EIA) has been prepared on the basis of these sub-reports.

The study of the functioning of the alternatives and their possible impact involved, for example, drawing on the knowledge and experience of a number of experts in the form of an expert team consulted several times. Where specific information from (members of) the expert team has been used, this is explicitly mentioned. The use of the expert team's input has been further detailed if necessary.

The content of this report is the responsibility of the authors.

This partial report 3 concerns the 'Import/export; return of residue' section.

The amended EVOA is expected to be published in 2024. This EIA part report 3 has been prepared on the basis of provisions from the unchanged EVOA and text from the LAP3 Policy Framework (Chapter B13) that does not yet take into account provisions from the amended EVOA.

1.2 Import/export; residue recycling

The processing of waste streams takes place in the Netherlands, but also beyond it. In a circular economy, waste brought in by cross-border transport or vice versa is also part of the waste treatment chain. In this way, waste is recovered as much as possible. If this is not possible, (fractions) of the waste will be disposed of. This can be done, for example, through incineration (and therefore its emissions) or landfill. In a circular economy, the ambition is to minimise landfilling and keep raw materials in the chain through, for example, reuse and recycling.

In the EIA, this alternative emphasises the amount of residue to be landfilled, resulting from the cross-border transport of waste and its treatment. When processing waste, residues may arise in the country that processes the waste. The question is what the effects will be if the CMP1 is going to lead to a reduction in dumping abroad of residues of exported Dutch waste, but also a reduction in dumping in the Netherlands of residues after processing foreign waste transported to the Netherlands.

In preparation of this analysis, a mapping was carried out to identify the Netherlands' role in the cross-border transport of waste and its processing. In addition, the current policy in the LAP3 has been mapped out and the way forward can be directed towards a circular economy, with landfilling of waste as the main factor in this report. It also analysed the contribution or non-contribution of waste transport to the use of fossil fuels.

1.3 Synopsis

Chapter 2 describes the assessment framework and how the impacts on alternatives are presented. Chapter 3 describes the reference situation. It includes information on the current state of import and export of waste. Chapter 4 then describes the alternatives and their assessment. Finally, Chapter 5 presents a full discussion of the alternatives.

2. Methodology

2.1 Introduction and overview

The assessment framework is set out in the Note on the scope and level of detail (NRD) for this EIA. Following the input and advice received on the ETD, some adjustments have been made to the assessment framework and have been incorporated in the final ETD[143].

In the context of the preparation of this EIA, the evaluation framework was further elaborated and some adjustments were made, also following the first finger exercises with the impact assessment and comments made in the expert meetings.

The main changes made to the assessment framework in the NRD are:
1. A level of aggregation has been added and the aspects and sub-targets are below that level. This leads to a two-topic format focusing on objectives and target ranges, respectively on circularity target and landfill and incineration target range, on environmental impacts and on feasibility.
2. In the target achievement topics, the second level of aggregation consists of sub-targets and in the topics of environmental impact and feasibility the second level of aggregation consists of aspects;
3. Some aspects are formulated in a slightly different way than in the NRD; for example, in the case of raw materials, all raw materials (and not only renewable or recyclable) are considered, with the ratio of renewable and non-renewable attention;
4. The feasibility theme has been divided into feasibility (involving the government) and feasibility (how market players can deal with the measures included in the alternatives); this difference between the government and the market is important in making the assessments of how the alternatives will work in practice. This is because businesses operating in the market play an entirely different role to that of public authorities. This is because operators make daily choices about the way materials are processed (cleaning or immobilisation), but also make choices about investments in processing capacity.
5. Some aspects have been added, namely energy use, water use and consumer market.

This leads to the assessment framework as shown in Table 2.1 and Table 2.2. This classification, comprising four topics and a total of 11 sub-objectives and aspects, was also used in the summary assessments of the alternatives. A higher number of indicators have been identified under the sub-targets and aspects. These are explained in section 2.2.

Table 2.1: Target Scope Assessment Framework

	Efficient use of resources
	Stimulating high-quality waste processing
	Impact on the quality of secondary materials, including in a possible next cycle of recycling
	Contribution to reducing landfilling and incineration

143 Reaction Note on Views – NRD for Environmental Impact Assessment for the Circular Materials Plan; Ministry of Infrastructure and Water Management, January 2023

Table 2.2: Impact assessment framework

Environmental impact	Greenhouse gas emissions
	Energy use
	Water use
	Nitrogen emissions
	Risks to man and the environment from spreading harmful substances
Realisability	Practicability and enforceability (government)
	Feasibility and compliance (market)

The NRD indicates that when assessing the alternatives (per component), specific effects or concerns are manifest that are relevant for the assessment, but are not included in the assessment framework. Where relevant, the assessment framework may be supplemented by specific indicators.

Rating scale

A five-point scale (Table 2.3) is used to assess target achievement and impact. The assessment is always relative to the baseline situation, also referred to in this report as the base case.

In principle, the assessment is qualitative. Where possible, it is supported by (semi)quantitative evidence.

Table 2.3: Rating scale

++	zeker en substantieel positief effect
+	vermoedelijk en/of beperkt positief effect
0	neutraal effect
-	vermoedelijk en/of beperkt negatief effect
--	zeker en substantieel negatief effect

o Further explanation of the assessment framework

Circularity target range

The indicators for this topic are presented in the diagram below (Table 2.4) and briefly explained. The order of the sub-targets and indicators is not indicative of the importance or weight. The starting point for the assessment is that, in principle, all indicators are of equal importance. Criteria weighting is applied in the context of further policy-making within the CMP. This part of the assessment framework relates to objectives and sub-objectives and has been defined accordingly. The underlying objectives of the policy are essentially to keep (soil) substances in the cycle as much as possible and to remove and retain pollutants from the cycle as much as possible. The latter can be done either by destroying contaminants (by burning or destroying them) or by dumping them in such a way as to prevent, as far as possible, any propagation into the environment, including in the long term.

The target achievement is divided by two dimensions relative to the NRD. The sub-targets for landfill and incineration have been addressed in their own context. Dumping and incineration inevitably result in material disappearing from the cycle. An initial analysis has shown that circularity and landfill/incineration assessments may be contradictory, leading to loss of information when aggregating the assessments to the thematic level.

Table 2.4: Circularity sub-targets and indicators

	Efficient use of resources	Efficient use of primary raw materials	The less use of (primary) raw materials, the better. The rationale behind this is that primary raw materials are finite, and that the extraction and transport of primary raw materials can have significant (negative) environmental impacts.
		Renewable – non-renewable raw material ratio in the cycle	The larger the ratio of renewable – non-renewable raw materials in the cycle, the better.
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	This involves moving up as much as possible: for these indicators, the higher the hierarchy, the better. In scoring this indicator, attention is paid to the potential overlap with other indicators (in particular, ‘primary raw material use’). Due to the relatively gross division of the waste hierarchy, a distinction is also made within the steps
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	
		Share/percentage of substances moving to a lower level in the waste hierarchy	
	Impact on properties of secondary materials, including in any subsequent cycle of recycling	Applicability	If the secondary material is applied. This indicator evaluates whether the qualities of the secondary material are such that it is possible to apply them properly.
		Returnability	At the end of the period of use. This indicator looks at the ‘ease’ of keeping raw materials in the cycle at the end of the period of use, following processing. In order to do so, the qualities of the secondary material concerned must be such that they can be identified and taken back
		Workability	It is also important that the secondary material can be processed responsibly at the end of the period of use.

As part of the assessment framework, the ‘high-quality’ of waste processing is examined. Further specification of the concept of ‘high quality’ is necessary to make this assessment effective. This report is based on the sole consideration of waste and the waste hierarchy is guiding the assessment of quality. This means that reuse (such as collected and reused beer bottles) is not considered. Depending on the efforts needed for reuse and its (environmental) impact, reuse will almost always be more positive than (high-quality) recycling. This also follows from the waste hierarchy.

Within this framework, the focus of this report is on the 'Raw Materials Conservation' aspect. As indicated above, the basis of the waste hierarchy is decisive. Within the same step of the waste hierarchy, this report refers to higher-quality forms of recycling where material is kept in a material or product chain as much as possible and of the highest quality over as many cycles as possible.

Landfill and incineration target range

The indicators for this part of the target achievement of dumping and incineration are shown in the table below. The underlying objective for both indicators is to reduce the amount to be landfilled or incinerated.

Table 2.5: Sub-targets and indicators for landfilling and incineration

	Contribution to landfill/incineration restrictions	Landfill volume per year	The less, the better.
		Amount of incineration per year	The less, the better. The impact of substitute fuel was not included.

Environmental impact

To illustrate the environmental impacts of the alternatives, the assessment framework has identified four aspects, see Table 2.6.

Some overlapping indicators are included. For example, CO_2 emissions are related to the use of (fossil) energy sources such as oil, coal and natural gas. However, the individual indicators have been chosen as they do not completely overlap. For example, CO_2 emissions include sources other than fossil fuels (such as CO_2 released from cement in the production of concrete); and fossil fuels are also used as raw materials (e.g. in the production of plastics, see also Figure 2.1).

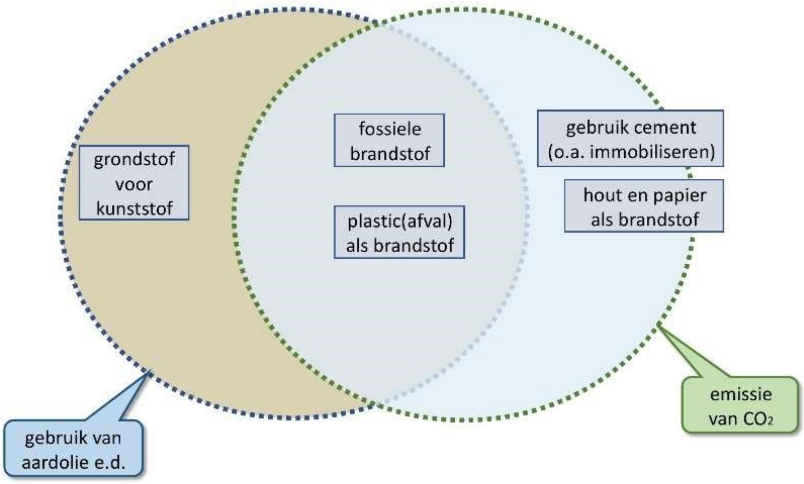

Figure 2.1: Relationship between CO2 emissions and fossil fuel use

For the use of energy, the indicator in question looks (only) at the energy use needed for the alternative in question (compared with the reference situation), for example for transport and for the processing operation in question. In line with the 'trias energetica', the underlying aim is to minimise the use of energy as a result of generating energy (fossil as well as renewable sources) has environmental effects. Moreover, this study did not specifically look at the potential for using non-fossil energy sources (and their impact on emissions).

For nitrogen emissions, it was decided to look at emissions rather than deposition. This has been done because the deposition site is bound, and nitrogen oxides are also relevant from an air quality perspective. The underlying aim is to minimise concentrations in the atmosphere and also to reduce nitrogen deposition in Natura 2000 areas.

Ultimately, ‘risks to people and the environment’ aim to minimise pollution (which may threaten the ecosystem and human health) and to minimise its spread to the environment. Keeping waste out of the cycle can involve destruction (e.g. by incineration or biological breakdown), controlled storage (in a landfill) or immobilisation of contaminants. The environmental effects of these forms of processing may also differ.

Table 2.6: Environmental impact aspects and indicators

Environmental impact	Greenhouse gas emissions	Emissions (in CO_2 equivalents)	Annual emissions, including from energy use, such as from transport and other processes through the release of CO_2 and other greenhouse gases The aim is to limit it as much as possible. In CO_2 equivalent/year.
	Energy use	Use of fossil fuels	Due to the use of fossil fuels as a raw material and as a source of energy. Minimise the use of fossil fuels
		Energy use	Reducing the use of energy and water is positive in itself (as it also reduces the need for energy generation, water extraction, etc.). The less, the better
	Water use	Water use	
	Nitrogen emissions	NO_x emissions	Emissions instead of deposition
		NH_3 emissions	
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	It looks at the various parts of the chain. These are potential emissions from processing, incineration, landfill or use of materials as building materials. The time scale and the mechanisms by which it can spread are important, namely during secondary use (through leaching, erosion). etc.) at the end of secondary use (crushing, grinding, etc.)
		Contribution to reducing exceedance of standards in soil, water and air quality	Chain of Use, Life Cycle Human health risk assessment (via drinking water, food, atmosphere)

Realisability

For the assessment of alternatives, it is relevant to assess how the alternatives will work in practice. This is referred to as ‘feasibility’ (Table 2.7). Therefore, the feasibility, enforceability and economic feasibility of the alternatives have been considered. It is important to determine the extent to which the authorities can implement the alternatives and the efforts and costs involved. It is also relevant how the actions envisaged, such as those presented in the alternatives, could be successfully implemented by the companies operating in the market that are required to implement the planned policy in practice. This will also give you an idea of how and to what extent alternatives will work in practice.

Table 2.7: Aspects and indicators realisability

Realisability	Practicability and enforceability (government)	Legal enforceability	It is legally possible; it is legally possible for the authorities to actually take the relevant measures (regulations, etc.).
		Practical enforceability	It assesses the practical feasibility of organising enforcement by the public

			authorities
		Financial enforceability	This relates to the costs of enforcement for the public authorities
		Costs for the public administration, direct and indirect and/or longer-term	For example, costs for damage to the environment and damage to health
	Practicability and compliance (market)	Practicability practical	It is available, has sufficient capacity and can be accessed. This includes opportunities and risks: how does it work in practice for the market?
		Compliance with practical	This will assess whether, in practice, it is possible to meet market compliance conditions
		Financial compliance	Costs for fulfilling market conditions
		Economic feasibility	These are the costs and benefits of the processors operating in the market. Costs are determined by capital charges and operational costs (including charges). The benefits are generated by the sale of secondary (land) materials, energy, subsidies, sales market, etc.)

o Assessment method

To allow the assessment of the impacts of the alternatives, a number of principles have been chosen. These include:
1. Separation of focus, impact and realisability assessments;
2. How to take the effects of substituting the use of materials and energy;
3. Reference situation to be used.

These principles are outlined below.

Impact assessment targets and effects: no adjustment to realisability

The evaluation of the impact of policy measures on the ground is an important consideration in the assessment of alternatives. After all, the final environmental impacts, and the degree to which it contributes to the achievement of the objectives, are the result of the combined ‘technical’ impacts of the policy options (for example, CO_2 emissions from a particular policy option) and the ‘success’ of the policy option in question on the ground. On balance, a policy measure that has a high technical-theoretical positive impact but is not applied in practice (for example because it is not economically feasible) will have little impact. In order to avoid double counting of impacts, but also to be able to make a proper balancing and possibly take additional measures, the approach taken in this EIA is as follows:
1. To assess target achievement and environmental impacts, the technical content of the policy option involved was considered. These include, for example, the composition (level of pollution) of component streams, the use of energy and water in techniques needed for the policy option, and emissions of nitrogen oxides and CO_2. This assessment does not take into account the extent to which the technique in question will actually be deployed. This may mean that the assessment shows a best-case situation, either in part or in full.
2. When assessing the aspects within the topic, it is important to check whether the policy option in question will be implemented in practice and to what extent, in practice, this option will lead to a different use of techniques and processes (compared to the baseline).
3. Assessments for the individual aspects are summarised, followed by a final assessment, which explains and discusses the effects on the environment and realisability, for each alternative and topic covered. These considerations will explain whether and to what extent the target-range and impact assessments are influenced by the realisability assessments.
4. This approach helps to identify possible dilemmas and follow-up questions for each part, as policy options can be promising in terms of content but are inhibited by realisability issues, and in this case, the potential for greater realisation

can be addressed. This can be illustrated in Figure 2.2. The assessment of the impact on the two axes has been done independently.

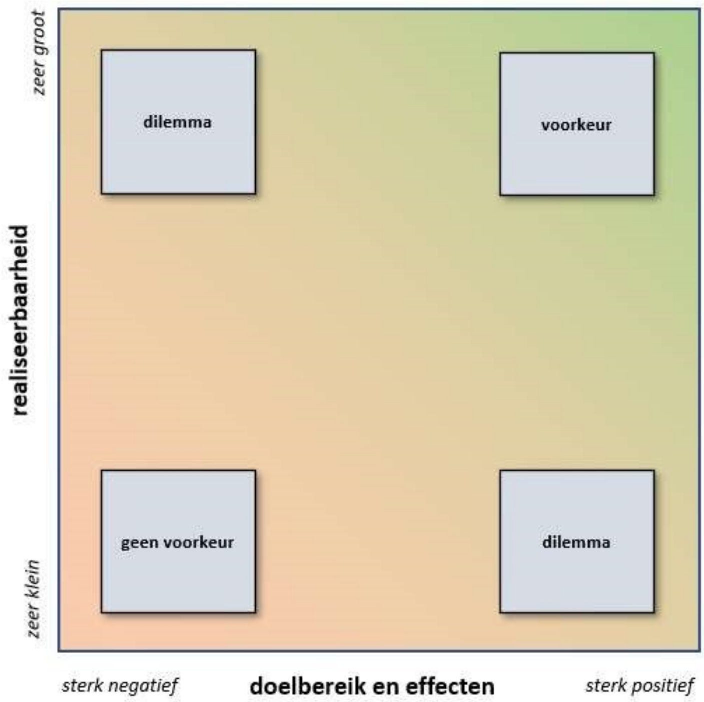

Figure 2.2: The ultimate desirability of alternatives is determined by target achievement and effects (horizontal axis) and feasibility (vertical axis)

Effects of substitution

This study looked at the effects of alternatives to substitution of materials and energy. For example, if the amount of waste to be incinerated decreases (due to a measure), the use of other energy sources (fossil and/or renewable) will increase, and if secondary material use increases, the use of primary material will decrease. When describing the environmental impacts of the alternatives, it has been described (where relevant) whether there may be second order environmental impacts. Where relevant, these have been included in the impact assessment. For example, if an alternative causes less waste to be incinerated or the calorific value of waste to be reduced has been considered as a consequence of the need to use other energy sources.

Reference situation

The effects of the alternatives are described and compared with the baseline situation, also referred to as the base case. The baseline is based on the policies and rules in force, without taking into account any deviations that may occur in practice. No evaluation of current policies and regulations was carried out under this EIA. In this report, we use the term ‘reference situation’.

3. Reference situation

3.1 Policy and Regulations

The LAP3 contains information on the shipment of waste into, from or within the EU. This is regulated by the European Waste Shipment Regulation (WSR). According to this Regulation, different procedures are possible for waste transports. The applicable procedure depends on the following questions:[2]

1. What will be communicated?
2. How is the waste processed afterwards?
3. Where does the waste come from and/or where is it going?

Table 3.1 gives an indication of the procedure to be followed under the current WSR. This EIA does not take into account the forthcoming amendment of the EVOA.

Table 3.1 Indicative list of the waste shipment procedure

EVOA art. 3.2, 3.4 (lower) risk)	Recovery	Between Member States	Information requirement
		Import into the EU	Information requirement
		Export to OECD[3]	Information requirement
		Export to non-OECD	Prohibition, notification or information obligation
	Deletion	Between Member States	Notification
		Import into the EU	Notification
		Export to EFTA countries[4]	Notification
		Other exports	Forbidden
EVOA Art. 3.1, 3.3 and 3.5: (higher risk)	Recovery	Between Member States	Notification
		Import into the EU	Notification
		Export to OECD	Notification
		Export to non-OECD	Forbidden
	Deletion	Between Member States	Notification
		Import into the EU	Notification
		Export to EFTA countries	Notification
		Other exports	Forbidden

Cross-border waste transports are subject to, among other things, a notification procedure under the WSR. This means that the person who wants to transport a waste stream across the border must first visit the

[2] LAP3.2, Section B.13.2.1

[3] Organisation for Economic Cooperation and Development

[4] European Free Trade Association; composed of Iceland, Liechtenstein, Norway, Switzerland.

the competent authority of dispatch submits a notification on the basis of the relevant provisions of the EVOA. In developing this topic, only waste shipped under a notification procedure is considered. This is because of the lack of visibility of shipments of waste that are subject to the information requirement procedure and the lack of policy guidance for these wastes in the CMP1. The EVOA covers shipments of waste within the EU and shipments of waste into or out of the EU.

The EVOA stipulates that a notification must comply with certain requirements. The LAP3 contains a policy outline or explanation of matters that should be taken into account by the competent authority when assessing notifications. A Competent Authority can object to a shipment. The EVOA offers several grounds for objection in the case of a shipment for recovery or disposal. It is up to the Authority itself to assess whether they actually object.

There is normally no objection from the Dutch competent authority (ILT) to a shipment of a waste stream when it is treated in a higher quality manner in the country of destination than is laid down in the minimum standard or desirable based on the waste hierarchy. There are some exceptions, such as the presence of SVHCs, a prohibition on this processing operation by legislation, or if this is explicitly laid down in a sectoral plan in LAP3 for the specific waste stream.

When it comes to the processing of a waste in an equivalent manner, the waste hierarchy is always applied to determine what, for specific waste, has been translated into a minimum standard in different sector plans, if applicable. This means that:

- In the case of a shipment to the Netherlands, waste covered by a sectoral plan is assessed against the minimum standard. The processing envisaged must be in accordance with this requirement. For waste not covered by a sectoral plan, the waste hierarchy and the policy set out in the LAP3 policy framework are assessed.
- For transfers from the Netherlands, the assessment is whether the proposed processing operation is at least equivalent to that required by the waste hierarchy. For waste covered by a sectoral plan, the minimum standard provides an indication of the possible and desirable forms of processing. For other wastes, the waste hierarchy is applied directly.

The above situations are deviated from at the time of transfer for landfilling. In principle, shipments of waste for dumping are objected to on the basis of the 'national self-sufficiency' principle. This means that no Dutch waste may be dumped abroad, nor any foreign waste may be dumped in the Netherlands. In addition, transfers from the Netherlands will be objected to if the minimum standard contains a form of preferred recycling and the proposed form of processing is a form of recycling other than the preferred form of recycling. In the current LAP3, preferred recycling has not yet been identified for any sector plan[144] (see Section 5).

On 22 March 2017, the Council of State issued a ruling affecting the Export Policy[145]. The Council of State considers that the minimum standard included in the LAP in the context of EVOA cannot be directly invoked to oppose the export of waste for recovery to Member States where this minimum standard does not apply[146]. The ruling does not allow an immediate objection to be made on the basis of the minimum standards laid down in the LAP itself, but an objection based on the waste hierarchy can still be raised. Indeed, the waste hierarchy is enshrined in the Environmental Management Act[147], which implements the Waste Framework Directive and the EWSR provides that Member States may object to shipments of waste on the grounds of infringing the EU-harmonised legal framework.

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steps in the waste hierarchy. What is not possible in the Netherlands as a result of this ruling is to object to export, using the Dutch minimum standard as a justification.

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144 LAP3, Section B.13.3.3.2

145 See previous forthcoming revision of the EWSR. This will change with the entry into force of the amended EVOA that includes an additional ground for objection on export.

146 LAP3, B.13.3.3.3

147 Article 10.4

For a specific number of streams, the LAP3 specifies that the waste to be processed may only be transported across the border if the residue to be landfilled goes back to the country of origin to be landfilled after its completion. These substances are:

- Activated carbon
- PCB-containing waste and soil (which as a whole are not suitable for recovery after pre-treatment)
- Shredder waste
- Dredged material
- Heavily contaminated waste water streams and basins (for the resulting ONO filter cake)

However, in some cases this mandatory return of the residue may not be done and is dumped in the country of destination. This contradicts the policy in the LAP, but on top of this, it makes sure that fractions in the Netherlands (and abroad) that are not desirable are deposited.

The EIA examines, for this sub-topic, to what extent the return of a residue can reduce the amount of residue sent to landfill in the country of destination. On the quantity of imports and exports and the associated residue flows, see further in section 3.2.

It must always be clear where and what will happen next with waste. This includes (also) the international classification derived from the Basel Convention and reproduced in the EU in Annexes I (D codes, disposal of waste) and II (R codes for recovery) of the Waste Framework Directive. This coding allows us to track how a given waste is processed across the border. Section 4 details the processing of the flows and the effect of the residue left over from the policy choices made for each alternative.

Figure 3.1 shows the overall process of this topic. The dotted line shows the scope of this alternative as indicative, i.e. the sub-process where measures in this alternative have a primary impact. The impact assessment describes relevant impacts across the system. The waste stream to be transferred is then transported and then an operation (such as additional separation or cleaning) takes place before the actual intended treatment is applied.

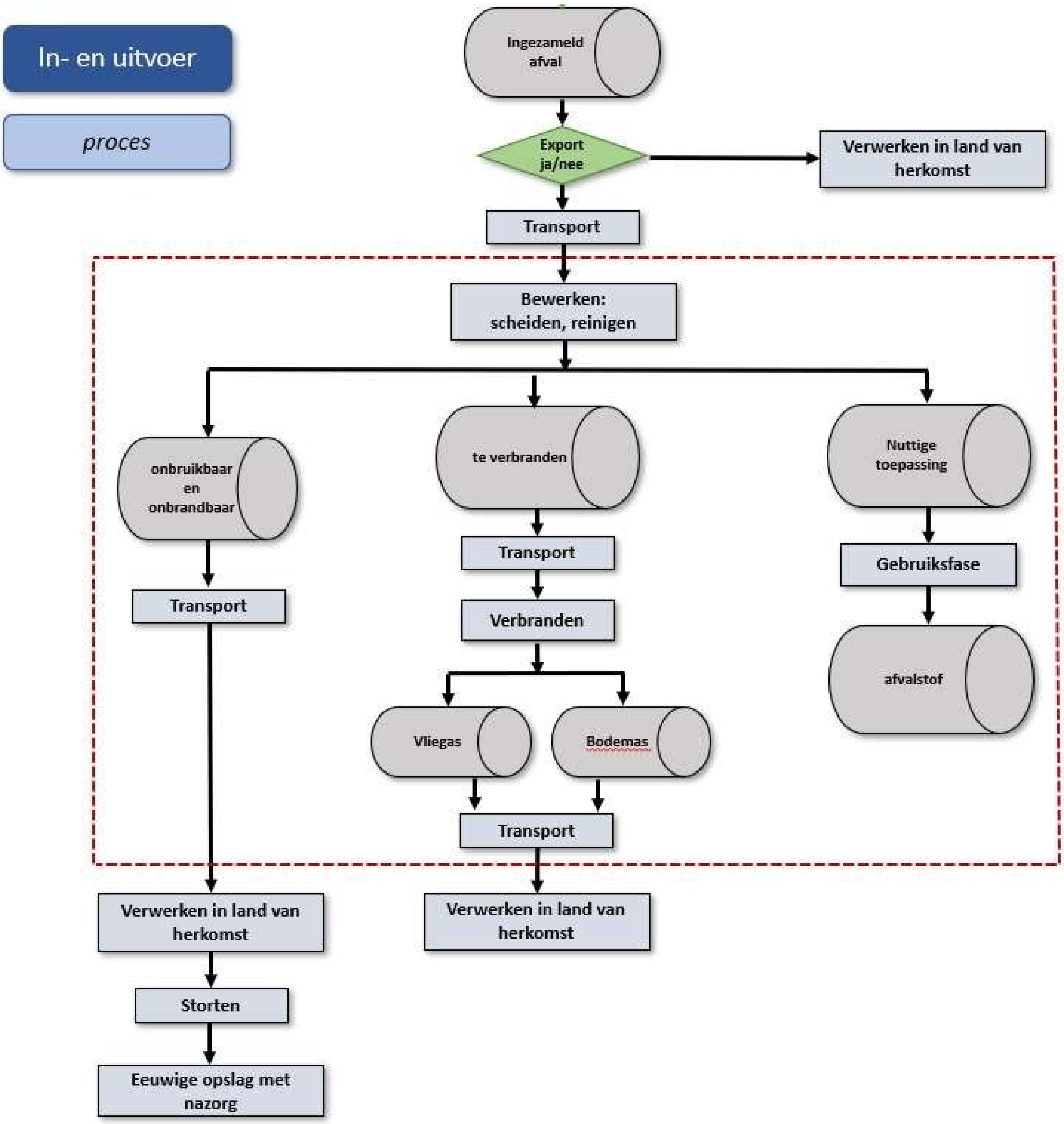

Figure 3.1 Process chart (interpretation of the LAP3) and shipment of waste streams

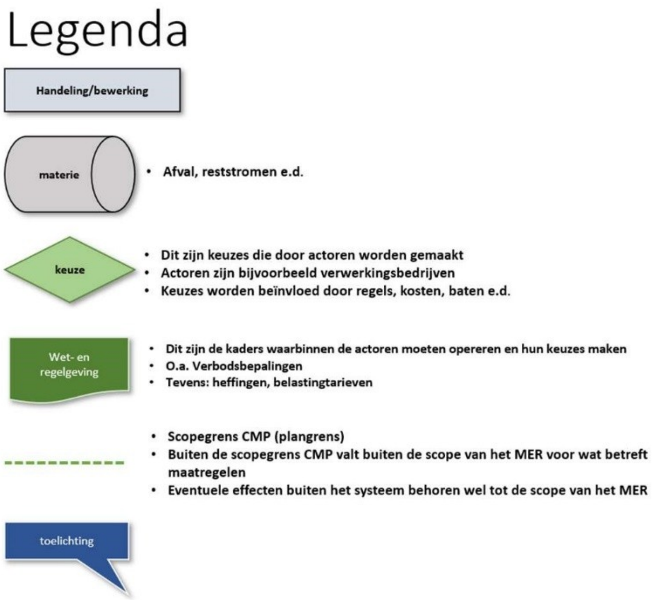

Figure 3.2: Legend of process and steering diagrams

3.2 Autonomous developments

The Netherlands imports more waste than it exports[148]. The total amount of imported and exported waste is shown in Table 3.2. Belgium, Germany and the United Kingdom are the three main countries with which waste streams are exchanged.

Table 3.2: Import/export total waste 2017 – 2021 (million tonnes per year)

Import totals	7.3	6.2	4.2	4.5	4.8	27.2
Export totals	3.0	2.8	3.0	3.5	3.8	15.9

The main streams imported are dredged material and sludge, bottom ash and slag, soil, sand and stones, other combustible hazardous waste, RDF (fuel from waste) and residual fractions from mechanical waste treatment (which is generally still processed into combustible waste or landfill). Figure 3.3 shows the amount of waste shipped to the Netherlands per waste stream per year (from 2017 to 2021). Despite an increase in imports to the Netherlands, it is clear that in recent years (at least until 2021) imports have decreased sharply. This is especially true for the large streams (land, RDF).). A downward trend in imports continues for RDF, while for the other wastes, after the biggest decrease in 2019, a slight increase has been registered.

The difference between import and export is shown by type of waste in Table 3.3 for the period 2017-2021.

148 Internal figures, Ministry of Infrastructure and Water Management, 2023.

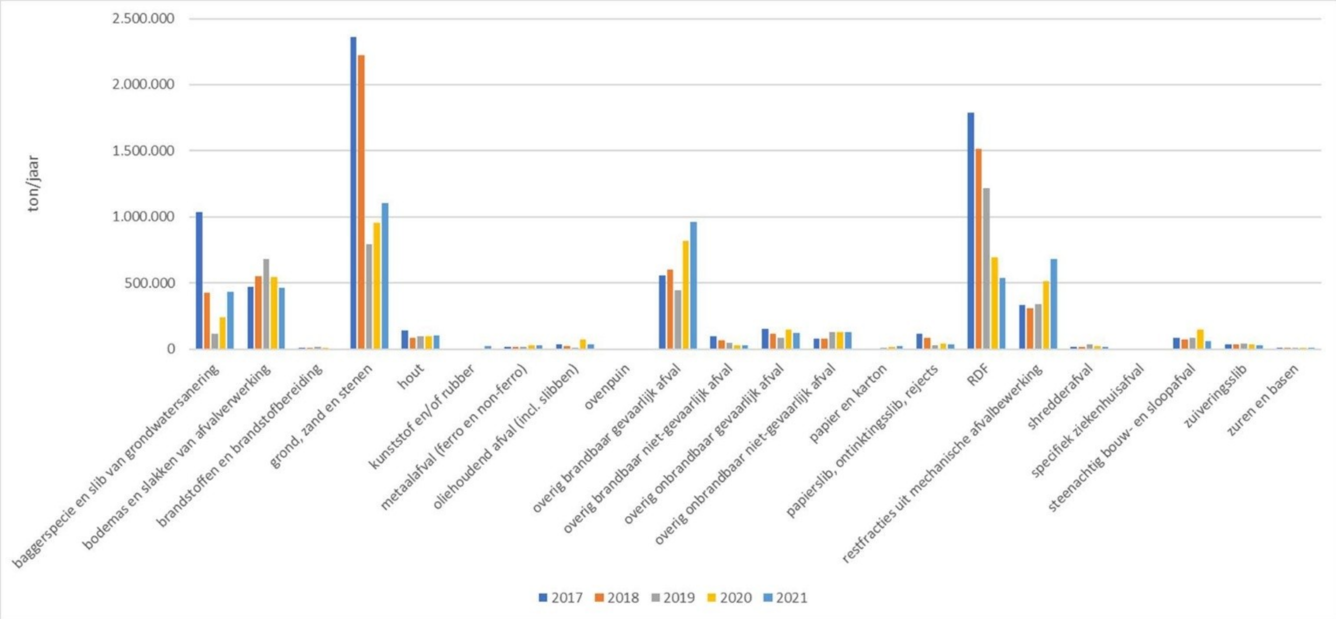

Figure 3.3: Total import waste streams (2017-2021)

Table 3.3: Difference between import and export 2017 – 2021 (million tonnes per year). Red – Export is greater than import. Black figures indicate a net import. Based on figures from Rijkswaterstraat

dredged material and sludge from groundwater remediation	1.04	0.43	0.12	0.05	0.16
bottom ash and slag from waste management	0.47	0.55	0.65	0.52	0.46
fuels and fuel preparation	0.01	0.01	0.01	0.01	0.00
soil, sand and stones	2.29	2.18	0.76	0.78	0.71
wood	-0.63	-0.63	-0.58	-0.75	-0.82
plastics and/or rubber	-0.05	-0.06	-0.07	-0.10	-0.10
Metal waste (ferrous and non-ferrous)	-0.00	-0.01	-0.01	-0.00	0.00
oily waste (incl. sludge)	-0.06	-0.06	-0.07	-0.07	-0.11
linings and refractories	0.00	-0.00	-0.00	0.00	0.00
other combustible hazardous waste	0.33	0.41	0.25	0.60	0.75
other combustible non-hazardous waste	-0.46	-0.37	-0.42	-0.36	-0.40
other non-combustible hazardous waste	-0.16	-0.12	-0.28	-0.28	-0.28
other non-combustible non-hazardous waste	-0.03	-0.01	0.03	0.03	0.03
paper and cardboard	-0.00	-0.01	-0.00	-0.00	0.00
paper sludge, de-inking sludge, rejects	0.09	0.07	0.03	0.03	0.01
RDF	1.57	1.29	1.05	0.53	0.39
residual fractions from mechanical waste treatment	0.16	0.09	0.06	0.29	0.46
shredder waste	0.02	0.02	0.04	0.02	0.01
specific hospital waste	-0.00	-0.00	-0.00	-0.00	-0.00

stony construction and demolition waste	0.07	0.01	-0.03	0.13	0.05
sewage sludge	-0.17	-0.18	-0.21	-0.22	-0.22
acids and bases	-0.10	-0.08	-0.07	-0.10	-0.08

Both for imports and exports, a picture of the operations can be provided (in accordance with the EVOA). The most common transactions are shown in Table 3.4.

Table 3.4: The five most common transactions involving imports of waste to the Netherlands.

	Primary use as a fuel or other means to generate energy.
	Recycling/reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).
	Recycling/reclamation of metals and metal compounds.
	Recycling/reclamation of other inorganic substances.
	Incineration on land.

For imports, the main operations are R05 (recycling/recovery of other inorganic substances, approximately 54%), R01 (fuel or other means of energy generation, approximately 33%) and R04 (recycling/recovery of metals and metal compounds, approximately 8%) (Figure 3.4). The available data do not provide an insight into the residual streams/residues resulting from the processing of imported waste. For operation R01 (incineration), this is relatively clear (i.e. bottom ash[149] and fly ash), and less clear for operations R04 and R05. This lack of clarity also means that the assessment of alternatives does not allow a quantitative approach to the quantities to be re-exported.

149 In addition, it is not clear (at present) whether these are 'raw' bottom ash or bottom ash stripped of relatively simple components such as metals

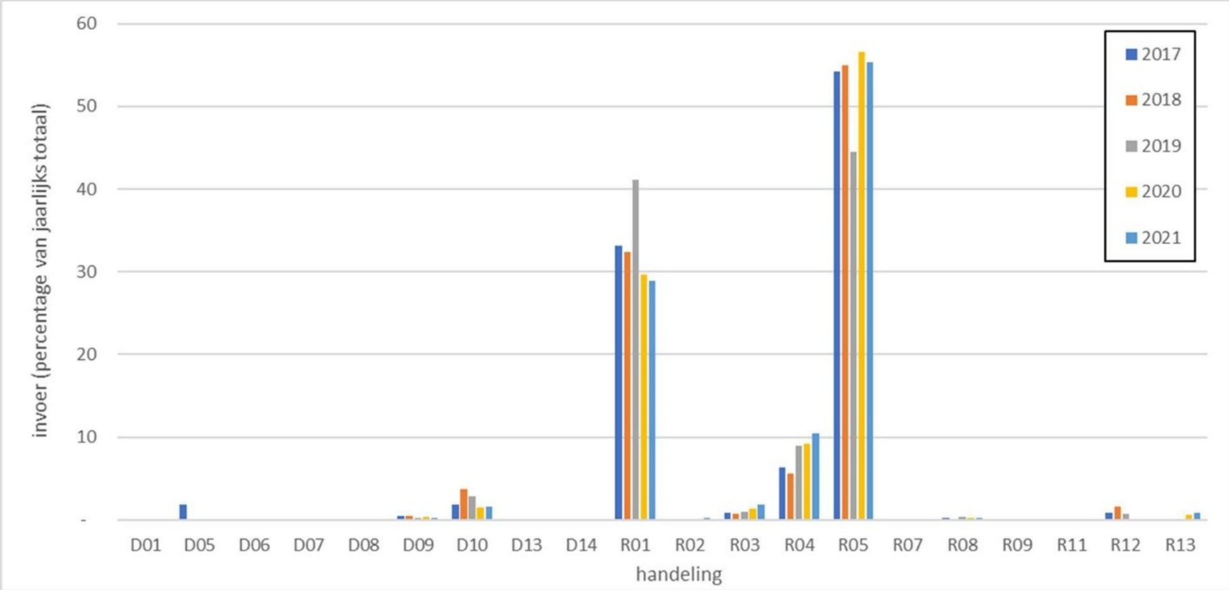

Figure 3.4: Operations (in accordance with WSR) related to imported waste

The main operation for the exported waste (Figure 3.5) is R1 (incineration, about half) and in addition the operations R5 (recycling/recovery of other inorganic substances), R3 (recycling/recovery of organic substances not used as solvents (including composting and other biological transformation processes)), D10 (incineration on land) and R4 (recycling/recovery of metals and metal compounds) (all about 10%).

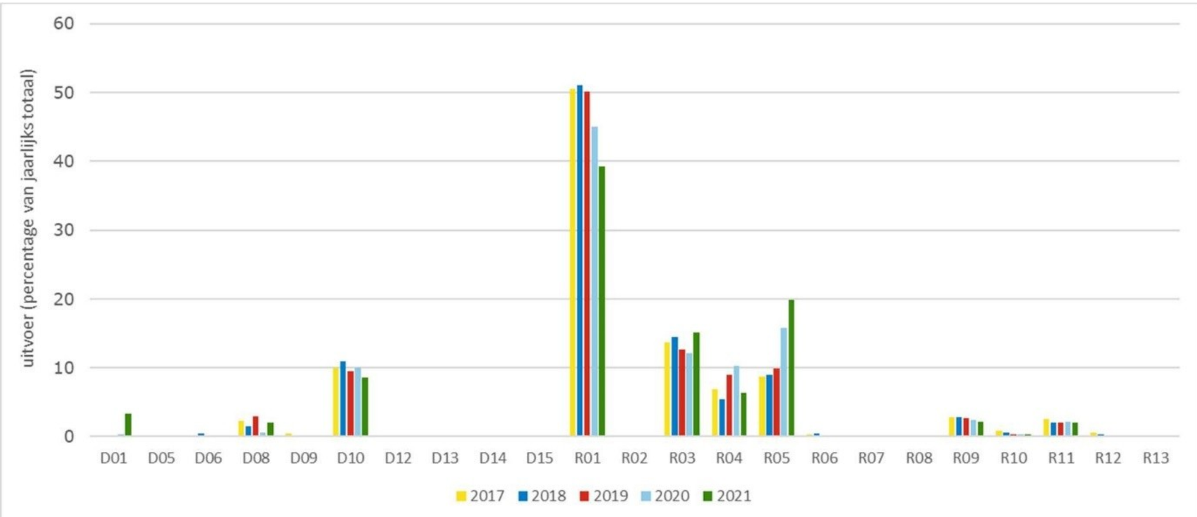

Figure 3.5: Operations (in accordance with EVOA) related to the exported waste

An indication of the residual flows originating from imports or exports of waste streams can be based on indicative figures for outputs from different operations. These are presented in Table 3.5. These figures are based on the current situation. Naturally, changes in the conditions (such as the policy on the waste and/or the margin conditions (processing capacity)) for one or more categories of waste will have a bearing on the amounts of residue (to be landfilled) and the volume of cross-border shipments of waste and residual flows. This effect will be greatest if conditions change for the largest waste categories (such as RDF and bottom ash). For example, for wood (exports), the operations are R1 (most) and R3 (smaller). A shift from processing to R1 to R3 does not affect the amount to be landfilled, but does affect the recovery operation. For bottom ash (with higher imports than exports), a shift to cleaning may mean that the amount of residues to be disturbed will increase.

Table 3.5: Residual streams generated from different combinations of waste and operations (as a percentage of the total). Only the combinations that make up a substantial part of the import are included (source: Rijkswaterstaat). This is an important step forward in order to estimate the current situation. Different percentages may be applicable per lot depending on, inter alia, the composition of the lot. 'Disappears by combustion' refers to (organic) substances which, when burned, are converted into (mainly) CO_2 and water, with the release of energy

soil, sand and stones	R5	0	99	0	1
other combustible hazardous waste	R5	5	0	95	0
dredged material	R5	0	100	0	0
bottom ash and slag from waste management	R5	0	0	92	8
RDF	R1	75	3	19	3
Residual fractions from mechanical waste treatment	R1	75	3	19	3
Wood	R1	98	0	0	2
Wood	R3	18	80	0	2
Bottom ash and slag from waste management	R4	0	50	40	10
Residual fractions from mechanical waste treatment	R4	0	30	65	5

R4 or R5 are concerned if this operation is waste with the primary aim of recycling/recovery involving the substitution of primary (a) organic substances, (b) metals or metal compounds, or (c) inorganic materials. There is no R4 or R5 if there is no actual substitution of primary materials, but only if the materials are made available for later recovery. Actual use R4 or R5 will be made later and/or elsewhere. The preparatory operation is then classified as R12. This approach thus makes it possible to identify residual flows from these operations, since they are referred to as R4 and R5 and are therefore recovered.

The reasons for the shipment of waste streams are expected to be primarily of an economic nature, with the market comprising, on the one hand, waste providers (exporters) and, on the other hand, waste treatment companies (importers). For example, importing waste from abroad can improve the efficiency of a processing plant. This may be related to quantity (continuity is ensured by adding waste, and more cost-efficient operation of a plant) and/or quality (waste with a better and more suitable composition for the plant). Importers and exporters' cost accounting considerations naturally also include transport costs, the costs of disposing of the residues and any charges, as well as benefits of the recovery of secondary materials produced from the waste. In addition, not every country has the same facilities and processing techniques in place, leading to the removal of installations abroad. For example, Dutch and Belgium are among the frontrunners in plastic recycling.

4. The alternatives

4.1 Overview of alternatives

4.1.1 The alternatives

The objective of the import/export policy topic; return of residue is to assess to what extent a change in policy, whereby the residue may or may not have to return to the country of origin, may reduce a residue fraction to be landfilled in the country of processing and the net impact on the Netherlands. This is in line with the Dutch desire to use self-sufficiency for landfill.

The policy choice includes, in addition to the baseline situation (III.a), two alternatives:

- III.b In this alternative, in all[150] cases, the cross-border transport of waste will only be accepted if the residue to be landfilled is returned to the country of origin.
- III.c In this alternative, mandatory return of a fraction to be landfilled to the country of origin is mandatory in all situations, insofar as the fraction to be landfilled represents more than x% of the waste stream to be shipped.

Both alternatives have the same purpose, and the implementation is different only. The alternatives are assessed against the baseline (zero alternative III.a). In addition to these alternatives, there is conceivable another variant in which the return of residues to the country of origin is not controlled, but import or export is not permitted if more than a certain percentage of the batch of waste in question is landfilled. This option has not been developed as an alternative but has been taken into account in Chapter 5.

4.1.2 Assessment overview

Sections 4.2 to 4.4 have described the alternatives, assessed and explained target ranges and effects. The following colour scheme has been used in the tables:

Table 4.1: Rating scale

	betekenis
++	zeker en substantieel positief effect
+	vermoedelijk en/of beperkt positief effect
0	neutraal effect
-	vermoedelijk en/of beperkt negatief effect
--	zeker en substantieel negatief effect

4.2 Alternative III.b:

This alternative is defined as follows: In all* cases, cross-border shipments of waste are only agreed if the residue to be landfilled is always returned to the country of origin.

4.3 Alternative III.b description

Instead of indicating that the residue should go back to the country of origin for a number of specified waste streams, this alternative is sent to all waste streams for import and export. Where it is obvious that a residue to be landfilled is generated after the processing of the waste, the return of

this residue to the country of origin may increase the amount (Dutch waste exported residue) or decrease (Dutch foreign waste imported residue) that is disposed of in the Netherlands.

The figure below shows the process of the system surrounding the introduction and implementation of waste streams. The figure shows the import/import route. The same system applies to exports/exports.

Figure 4.1 shows the flowchart of Alternative III.b.

150 ‘All’ in this EIA expressly does not mean that any translation into the CMP does not leave the possibility of formulating diverging policies for specific cases.

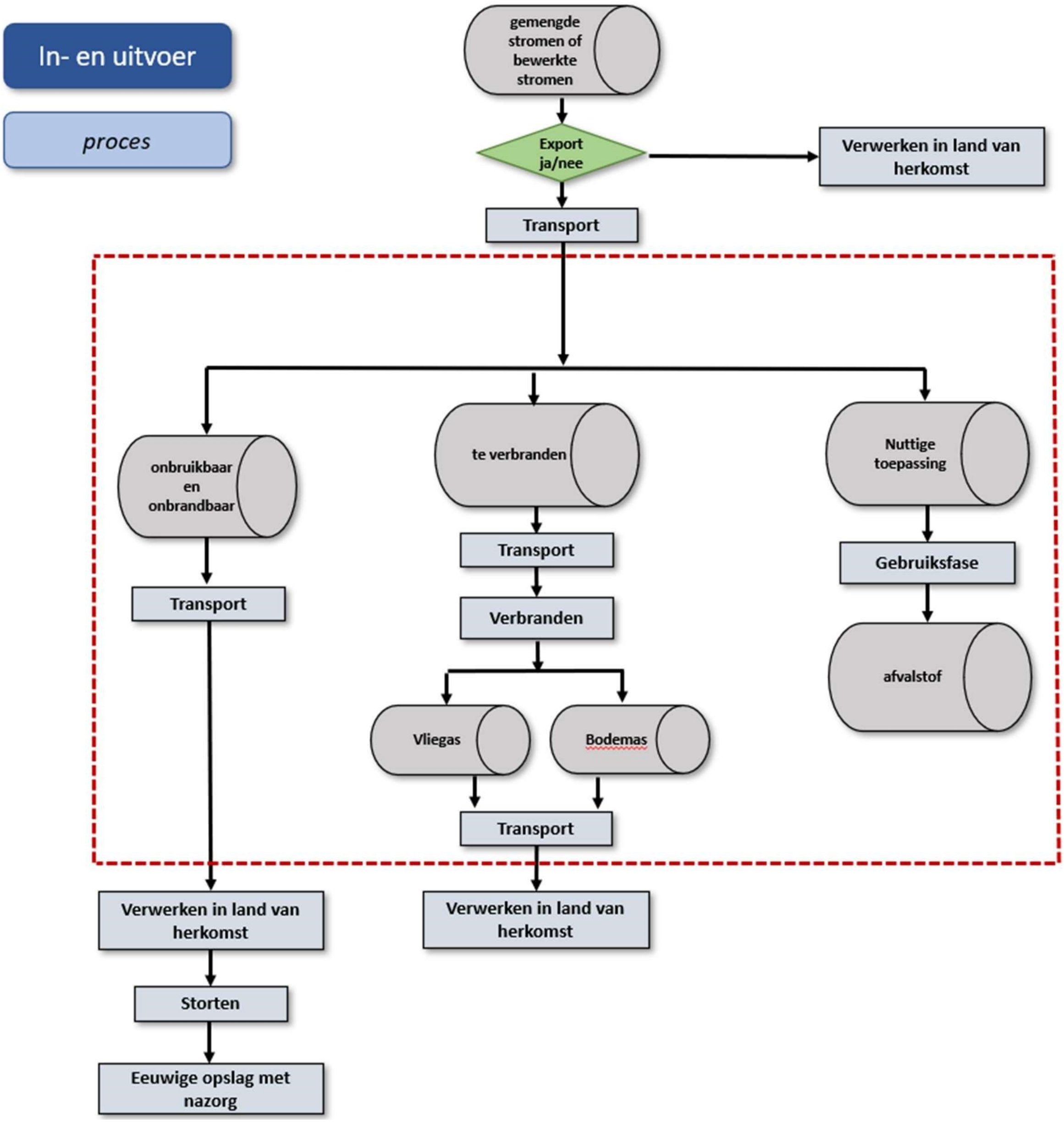

Figure 4.1 Process diagram of alternative III.b (red dotted line is the Netherlands and green line affects which alternative)

The dotted line shows the scope of this alternative as indicative, i.e. the sub-process where measures in this alternative have a primary impact. The impact assessment describes relevant impacts across the system.

This process shows that the choice is at the point of transfer. The choice lies mainly with the Dutch exporters or importers, knowing that any residue will have to be re-exported and processed in their country of origin. Naturally, the choice will also depend on the availability of processing techniques (the availability of techniques/facilities and the availability of capacity), either at home or abroad.

The principle is twofold and applies both to the export of waste (residues must be imported again) and to the import (residues must be exported again). This alternative will therefore have an impact on the countries that import a lot from the Netherlands. In addition to the direct effect of returning the residue to the country of origin, an indirect effect may also be that in some cases import/export is completely abandoned because the re-export of the residue is considered too burdensome. This may reduce the amount of transport movements and hence the CO_2 release, although this depends on the different flows. At the same time, the return of residue to the country of origin may lead to additional transport. In principle, practicability and enforceability are easier, since for all waste streams the residue has to be returned, regardless of the quantity or location.

4.3.1 Impacts and assessment of alternative III.b

Circularity target[151]

The target achievement assessment for alternative III.b is presented in Table 4.2.

Table 4.2: Assessment of circularity alternative III.b target range

	Change in use of raw materials	Efficient use of primary raw materials	0
		Ratio of renewable – non-renewable raw materials in products	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher grade in the waste hierarchy (higher quality processing)	0
		Share/percentage of substances remaining at the same level in the waste hierarchy	0
		Share/percentage of substances moving to a lower level in the waste hierarchy	0
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	0
		Returnability	0
		Workability	0

In principle, this alternative does not encourage more intensive or higher quality processing. After all, the criteria for transport remain the same. In the case of a shipment to the Netherlands, waste covered by a sectoral plan is assessed against the minimum standard. The processing envisaged must be in accordance with this requirement. For transfers from the Netherlands, the assessment is whether the proposed processing operation is at least equivalent to that required by the waste hierarchy. In this alternative, the residue to be landfilled should be returned to its country of origin

.

The ex-ante (contractual) guarantee that the residue to be landfilled goes back to the country of origin is expected to reduce transfer in practice. The threshold for processing Dutch waste at potentially more suitable facilities abroad, including within the EU and OECD, will increase. Of course, costs also play a role in this. Processing at a less optimal facility in the Netherlands may result in a higher fraction of waste to be landfilled in the Netherlands. Conversely, it may also play a role in exports from other countries to the Netherlands.

Key figures for the output of the most common operations (R1, R3, R4, R5 and D10, see Table 3.5) show the amount of residue and the amount of recoverable materials arising in the country of processing, and their contribution to reducing the use of primary raw materials for the importing country. The starting point is that the secondary materials, such as immobilisate or freely usable building materials, that arise are actually recovered in the processing country. There is a

151 This also applies to Alternative III.c

relationship with Part Report 1 and the use of materials in immobilisates or as aggregates. The policy also applies to the waste imported for processing.

For the import of waste, the breakdown by residual flows resulting from operations on imported waste is summarised in Figure 4.2. A large part of the imported material disappears by incineration. The vast majority are recovered, either directly or indirectly (e.g. after immobilisation). In the Netherlands, approximately 125-150 000 tonnes of waste to be landfilled arise each year from imported waste. Alternative III.b would require the material to be transported back to the country of origin.

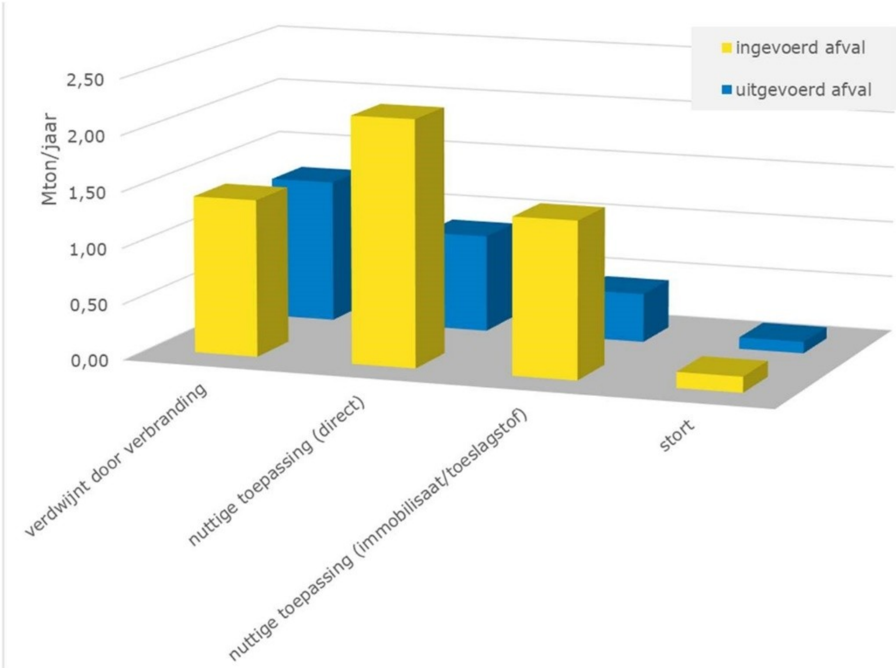

Figure 4.2: Residual flows originating from imported and exported waste. Forecast for average Mton volume per year, based on average landings and operations for the period 2017-2021. The references in Table 3.5 have been used. These relate to the current situation. Alternative III.b would require the material to be deposited back to the country of origin

At export, incineration is the dominant operation. The main part of the material disappears due to incineration. In foreign countries, waste exported from the Netherlands generates far less recoverable materials than in the Netherlands, see Figure 4.2. The amount of waste to be landfilled — under the assumptions used for the output from operations — is in the order of 100 000 tonnes per year. Alternative III.b would require that this be re-imported into the Netherlands.

Based on these figures and the current situation, the positive impact of this alternative on the amount of waste to be landfilled in the Netherlands appears to be relatively small. However, change can occur when there is a shift from immobilising to cleaning. After all, this may increase the amount of residue to be landfilled.

In terms of the sub-goal of changing the use of raw materials, this alternative has little effect. The criteria ‘use of primary raw materials’, ‘ratio of primary raw material – secondary material in products’ and ‘ratio of renewable – non-renewable raw materials in products’ have a neutral impact.
(0).

The balance of the residue to be landfilled is reduced because – according to the figures for the current situation – more residue is sent abroad from the Netherlands than the other way around. The alternative scores positive (+) on this criterion compared with the baseline situation. In general, this will have a positive impact on the sub-objective of promoting high-quality waste processing. Challenges for the market and public administration may affect feasibility, as described below in this topic.

The impact on the sub-goal of contributing to closing material cycles is assessed as neutral. The proportion/percentage of materials that disappear from the cycle is not or hardly influenced. There are no direct effects the sub-goal of quality of secondary materials. The criteria of ‘applicability’ and ‘recyclability’ are scored in a neutral way for this alternative (0).

However, there is a risk with this alternative. The current choice of exporting waste is to a large extent motivated by costs and the availability of processing capacity in the Netherlands. A link between the costs, the availability of processing capacity and the supply of waste streams is also a factor. Changes in supply and demand will lead to changes in costs. How this works in practice is not certain. The available data show that many specific waste streams with a small quantity are transported to another country for processing. If this alternative were to reduce the quantities of certain waste streams delivered abroad and to process them more domestically in possibly less specialised facilities, this could lead to a higher fraction of residual waste, which would then have to be disposed of in the Netherlands. It may also lead to a decrease in the quality of products. In addition, it can be complicated for waste processing companies to separate the different flows in the context of their business operations, thereby increasing the administrative burden in a more complex and risky way.

Landfill and incineration target range [152]

The assessment for this sub-objective is presented in Table 4.3.

Table 4.3: Landfill and incineration alternative III.b target range assessment

	Contribution to landfill/incineration restrictions	Landfill volume per year	+
		Amount of incineration per year	+

Due to the fact that the Netherlands is currently an importing country, this alternative may result in a reduction in the amount of residue remaining to be dumped in the Netherlands. However, the size of the impact (i.e. reduction in the amount of waste to be landfilled in the Netherlands) is small, based on the information provided in Figure 4.2 and Figure 4.3. While there is a relatively large difference between import and export, this difference is reduced by the fact that a larger share of (smaller) exports are returned to the Netherlands. Exports from the Netherlands (less than imports) consist of waste streams which lead to a relatively high amount of residue (compared to the streams imported). However, it can be seen that imports into the Netherlands have a relatively high impact on recovery. This is due to the processing of the bottom ash (which results from the incineration of imported waste) in immobilisate or recovery as an additive (see Table 3.5).

A secondary effect might be that, in the case of this alternative, WIPs, if the supply of combustible waste from abroad is reduced, accept domestic waste for incineration which would otherwise be disposed of in landfills. This can contribute to reducing the amount of waste going to landfill.

The impact on these criteria is therefore positive, positive for landfilling (+) and positive for incineration (+) compared to the reference situation.

152 Idem, also applicable for Alternative III.c

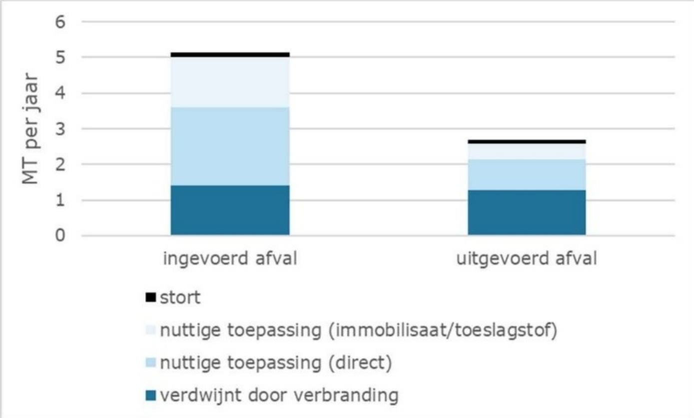

Figure 4.3: Overview of the ‘destination’ of waste imported and exported

Environmental impact[153]

The assessment of the environmental impact of Alternative III.b is presented in Table 4.4.

Table 4.4: Environmental impact assessment of alternative III.b

Environmental impact	Greenhouse gas emissions	Greenhouse gas emissions	+
	Energy use	Use of fossil fuels	-
		Energy use	-
	Water use	Water use	0
	Nitrogen emissions	NO_x and NH_3 emissions	-
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+

The main determinants of environmental impacts are that the alternative leads to a net reduction in landfill and incineration in the Netherlands. In addition, this alternative has an impact on transport flows. The latter is complex and difficult to determine because there will be multiple (opposite) effects. On the one hand, the alternative may reduce the attractiveness of offering waste across borders due to the obligation to return the residue to the country of origin. This does not automatically mean that transport movements will decrease. Indeed, in the border areas, the current situation is

the utilisation of processing capacity across the border, which is very close to[154], and the bulk of waste is generated in the Randstad region, which is also treated directly there. Other processing options in the Netherlands may be more distant.

153 Idem, also applicable for Alternative III.c

154 Available figures show that the vast majority of cross-border transport takes place with neighbouring countries of Belgium and Germany

Therefore, in these cases, the impact on transport is negative. For flows between countries with a greater distance, this alternative could have a positive impact in terms of avoided transport. What is clear is that the residue must return to its country of origin at all times. This obligation will initially lead to the contractual guarantee of this return. This may lead to additional transport. The extent to which this occurs in practice depends on the logistics of the waste sector. However, the amount of material to be returned is much smaller than the amount of basic material.

For the overall impact on energy use and greenhouse gas emissions, what is done with waste qualifying for incineration with energy recovery in practice is relevant. The incineration of this waste releases greenhouse gases, irrespective of the country in which it takes place. However, energy recovery leads to lower emissions from other (partly) fossil sources. If this alternative leads to a choice for lower-grade processing (incineration without energy recovery or landfill), this ‘replacement of emissions’ does not occur, which is a negative result on balance. Locally (in the Netherlands), less incineration leads to lower emissions. This alternative scores positively on the greenhouse gas criteria (+).The increase in transport and the reduced contribution of incineration to energy production leads to greater use of fossil fuels and energy consumption, leading to a negative assessment on these criteria (-). This effect also affects increasing transport on nitrogen (-). No impact can be expected on the ‘water use’ criterion, which leads to a neutral score (0).

Due to the net reduction in landfill in the Netherlands, this alternative has a slight positive impact on risks to people and the environment from the spread of harmful substances. However, the risk of spreading from controlled landfill sites is low. For the criteria 'dispersal of pollutants into soil, water or the atmosphere' and 'contribution to reducing exceedance of standards soil, water and air quality', the assessment is positive (+) compared to the reference situation.

One aspect of cross-border waste transport is that not only the waste itself, but also its contaminants (of course within the legal limits) are brought across the border. The operations carried out in the country of destination result in some of the contaminants being incinerated (e.g. PAH from tar-containing waste incinerated). Some of the contaminants remain and are concentrated in the residue. By depositing the residue in the country of destination, the receiving country will also be responsible for ensuring that the contaminants are disposed of in principle in a perpetual way (as part of the care also needed for the domestic residue), or for safe application. Depending on the method of processing, some of the contaminants may remain in the cycle (e.g. in an immobilisate). This may be an argument for a policy choice on landfill self-sufficiency.

Realisability

The assessment of the realisability of Alternative III.b is presented in Table 4.5.

Table 4.5: Assessment of the realisability of Alternative III.b

Realisability	Feasibility and enforceability (government)	Legal enforceability	0
		Practical enforceability	-
		Financial enforceability	0
		Costs for the public administration, direct and indirect and/or longer-term	0
	Practicability and compliance (market)	Practicability practical	-
		Compliance with practical	0
		Financial compliance	0

	Economic feasibility	-

The available import and export figures were used to assess this alternative. Both imported and exported waste streams are known about which operations they are subject to. For imported waste, the R1 (incineration with energy recovery) and R4 and R5 (recycling and recovery) operations are strongly dominant. For exports, operation R1 is the dominant operation (approximately 45-50%) followed by operations R4, R3, R5 and D10.

For the R1 operation (incineration), it is relatively clear how the processes are and what residues are generated: the main combustion residues are the bottom ash and fly ash (after separation of metals). With regard to the waste to be incinerated, it is important to briefly describe the process at a waste incineration plant and how residues are produced. These are the facilities that handle the bulk of waste incineration. This is an example, there are also other possibilities for incineration, such as Bio-Energy Plants (BECs), for the wood waste.

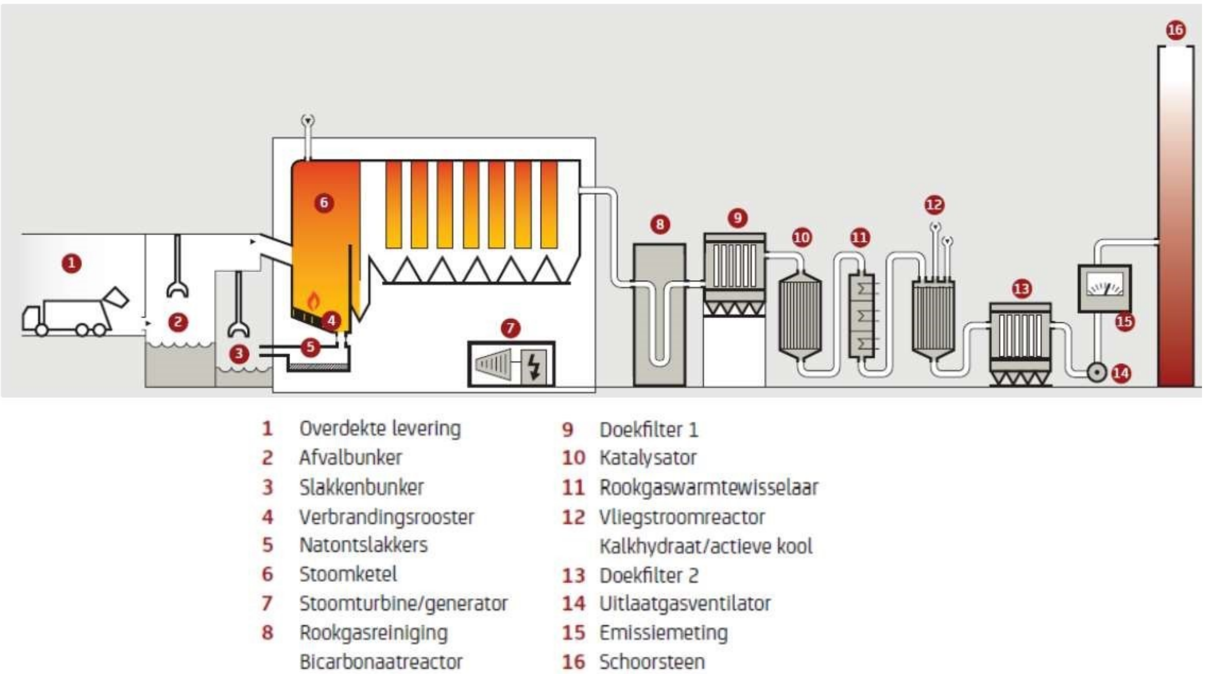

Figure 4.3: Schematic representation of a waste incineration plant (source: EIA Extension Third line of Waste to Energyinstator Delfzijl, Arcadis, 29 February 2016). The waste bunker (No 2) collects the waste shipped. The ovens (No 4) are fed from the bunker. The non-combustible residues are collected at the slag bunker (No 3). In the cleaning of flue gas (Nos 8 to 13), fly ash is produced. The waste streams from incineration consist of the bottom ash (slag) and fly ash.

Waste incineration plants (WIPs) benefit from the constant supply of combustible waste with a sufficient calorific value and a minimal quantity of incombustible and non-usable fraction. The incinerators are fed from the waste bunkers that are filled with waste (usually) generated by lorries, ships or trains.

The bottom ash is largely copied away from the incinerator. Incinerator bottom ash must be processed correctly (Subreport 1). In practice, waste imported for incineration is not likely to pass through the incinerator as a separate batch (which would allow the bottom ash of that specific batch of waste to be kept separate and treated separately), but as part of a constant supply of waste. Larger batches and multi-line incineration plants may require modifications to ensure that bottom ash can be kept separate to ensure its return. This could potentially be at the expense of efficiency. In practice, therefore, it will be difficult, require more efforts and possibly also lower (energy) revenues to separately collect and return residues of imported combustible waste to the country of origin. It is, of course, possible, on the basis of information from the composition of the waste and more specifically from the proportion of non-combustible, to return a corresponding amount of bottom ash to the country of origin. It is also unlikely that fly ash can be collected and disposed of separately by batch of waste to be incinerated. This ‘recognition’ aspect is even more pronounced when processing soil ashes into immobilisates or when recovered as aggregates. The remaining residues are difficult to link to the original batch of waste imported.

For operations R4 and R5, especially for larger batches, it is probably better to keep the residue (returned under this alternative) isolated than for incineration, although in practice waste streams are also combined (stored) prior to processing. The origin of the waste streams may be taken into account if necessary. In the case of batch processing of batches of waste, it is clear which residual flow arises from which batch of waste. As a result, the practical feasibility of this alternative is relatively straightforward for the R4 and R5 actions, but may also lead to a reduction in efficiency (e.g. by allowing more space for intermediate storage).

This alternative is feasible for the administration. The CMP1 provides framework conditions for controlling the recovery of the residue. In the current situation, cross-border waste streams are also regulated and enforced. This alternative simplifies the procedure for enforcement, with each residue fraction instead of having to return a number of residue fractions to the country of origin. The process according to the alternative for the Administration will not involve complicating tasks and tasks. However, the tasks will increase due to an increase in the waste streams to be checked and notifications to carry out the residue. These tasks are likely to be organised in the same way as in the current situation, with the alternative scoring neutral (0) on balance. In terms of legal feasibility, financial enforceability, this alternative scores in a neutral position (0). In the long term, there will also be no additional costs for the public authorities and this criterion will also be scored in a neutral way (0) with respect to the reference. For enforceability, the assessment has been assessed as negative in comparison with the baseline situation. This is based on the situation outlined above with regard to the ‘ear tags’ of the residues to be returned to the country of origin under this alternative.

One factor contributing to this alternative is reciprocity: the starting point is that what applies to imports into the Netherlands also applies to exports. This means not only that regulation requires cross-border coordination, but also that, in practice, enforcement actually extends beyond national borders. In addition, if the other Member State concerned does not wish to consent to import/export of the residual flows, it is still complicated to implement.

However, for the market, this alternative can have a significant impact. In determining the processing site and the location of the processing, costs and available capacity play a role, as well as administrative ‘burdens’. Transport costs are also part of the balancing of costs. In current practice, cross-border transport and processing are carried out, among other things, because they have cost-technical advantages. The obligation to recycle residue may lead to different choices. For example, less waste can be offered from abroad to Dutch WIPs because the obligation to recycle the residue entails additional costs, making incineration in the Netherlands less attractive. This has a negative impact on the continuous flow of waste, and therefore on the efficiency of waste incineration plants, as well as of other processing plants. As a result, WIPs may adopt other waste streams that are less attractive for processing and therefore have a lower yield on the incineration. However, in the case of waste that would otherwise be landfilled, this can be positive for reducing the amount of waste to be landfilled. An effect may also be that waste processors in border areas refrain from processing nearby on the other side of the border. This option may become more expensive under this alternative due to the obligatory recycling of residues. All in all, the economic feasibility of this alternative has been assessed as negative (-).

However, there is a difference in this regard between the waste streams and the related operations. For the waste stream/treatment combinations that have a relatively small residue (such as dredged material and sand with operation R5, see Table 3.5), this alternative has practically no negative impact on the market. For bottom ash and slag (operations R4, R5), the effect is greater because the residue is on average in the order of 8% (0% in the case of immobilisation, the residue to be landfilled in the case of cleaning is 15%). Soil is a complex stream in this respect, as it produces practically no residue in thermal cleaning, while in extractive cleaning it generates a residue of 15%-20%. Therefore, the effect is highly dependent on the form of processing, which cannot be easily ascertained by means of notifications as they are not governed by a code. In the case of combustible waste (operation R1), the composition of the respective batch of waste is relevant for the assessment made by the market: for a batch with a relatively high calorific content and a small proportion of non-combustible, exports are more likely than for a batch with a lower calorific content and more residue. As indicated above, for a continuous process such as incineration, it is almost impossible to keep residues of waste brought across the border separate for the purposes of return.

As regards feasibility, this alternative will be assessed negatively. For example, it is very complicated for the processors to transfer the flows that are processed back to the correct country of origin once it has become a residue as previously mentioned. For all other criteria (enforceability, practical and financial) there is no impact on practicability. The scores for the alternative are neutral (0).

4.4 Alternative III.c.

Alternative III.c is defined as follows: In all situations, mandatory return of a fraction to be landfilled to the country of origin is indicated, in so far as the fraction to be landfilled represents more than x% of the waste stream to be transferred.

4.4.1 Alternative III.c description

The aim of this alternative is to provide a nuance of Alternative III.b. Instead of returning all the residues to be landfilled to the country of origin, the waste stream and the amount of residue are now considered. If there is a quantity of residue to be landfilled that exceeds a certain quantity (%) of the waste stream, the residue must return. The limit x for the percentage covered by this alternative (which in principle may vary from one waste stream to another) is not yet set.

The amount of residue left after the processing of a waste material depends on a number of factors, such as the composition of the stream in question, what is flammable and inert, and the operations carried out. Table 3.2 gives an overview of the proportion of residual products for the most common types of waste and operations in import and export. This ranges from virtually no residue (for operation R1 of wood) to a residue of approximately 15 % to 20 % (for operation R5 of bottom ash and slag).

In this alternative, it is important to understand which import and export flows are the highest and which waste streams yield the highest residue. This gives an indication of the extent to which this alternative is suitable for reducing the amount of residue to be landfilled in the Netherlands.

As indicated in section 3.2, the main streams imported (in the years 2017-2021) are dredged material and sludge, bottom ash and slag, soil, sand and stones, other combustible hazardous waste.
RDF (fuel from waste) and residual fractions from mechanical waste treatment. The largest exports concern straw wood, other combustible non-hazardous waste, other non-combustible hazardous waste, sewage sludge, residual fractions from mechanical treatment operations, other combustible hazardous waste and RDF, see Figure 4.6. Wood is by far the largest fraction, with operation R01 as the main processing method (primary use as fuel or energy generation). However, it is unclear what wood flow this is, A, B or A/B wood.

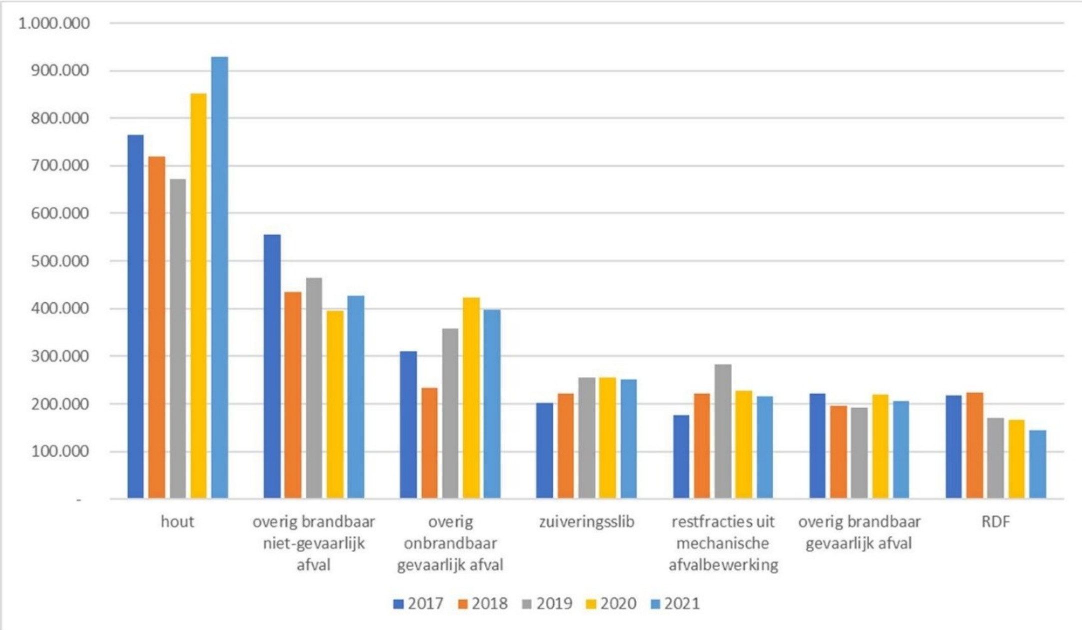

Figure 4.6: Largest flows of exports (more than 5% of total) 2017 - 2021

Each flow in the export chart (Figure 4.6) is combustible waste, or it is waste incinerated after recycling/processing. Figure 4.6 shows only the flows exceeding 5% of the total. In addition, there is a large and very diverse group of waste streams of a (much) smaller size.
In general, 25 % bottom ash remains after incineration in a waste processing plant (AVI)[155]. This can be an indication of the amount of waste exported from the Netherlands across the border and might need to go back[17].

As regards imports of waste streams, clarification is provided on which operations have been (mainly) applied. The same figures as in section 3.2 have been used. The figure below shows the different waste streams introduced in 2017-2021, with the most frequent one. It is clear that five actions are the most commonly applied, namely R05, R01, R04, D10 and R04.

155Signal reporting: Analysis of risks in the bottom ash chain Signal reporting Human Environment and Transport Inspectorate (ILT) (ilent.nl). [17]It is unclear what type of R/D operations were applied to the export flows of waste in 2017-2021.

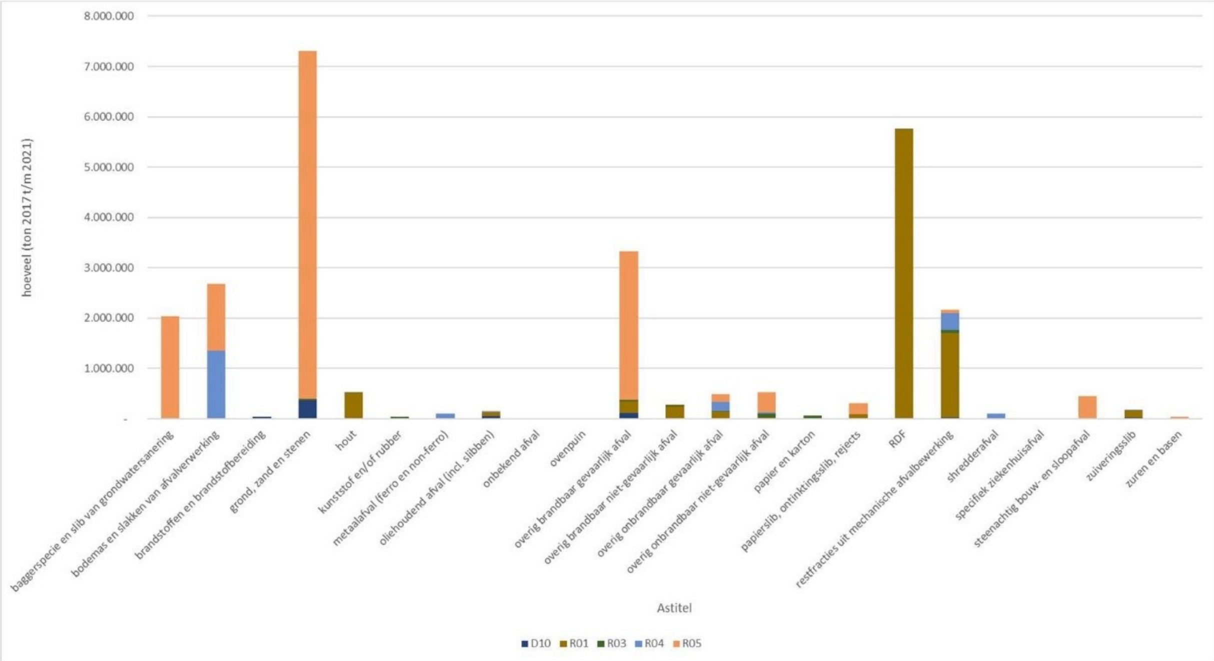

Figure 4.7: Quantities per operation by type of waste (sum in tonnes 2017 to 2021) (only operations more than 1% of total)

It is clear, however, that almost no bottom ash is exported from the Netherlands, but many waste is imported that is incinerated (R01).

For the assessment of the impacts of this alternative, it has been assumed that (because of the targets on this topic) for the large waste streams, such as RDF (see Figure 4.7), a percentage will be set at such a level that these streams will not be exempted from the obligation to return residues. Indeed, if for the major streams this alternative does not hinder imports or exports, the target range is limited.

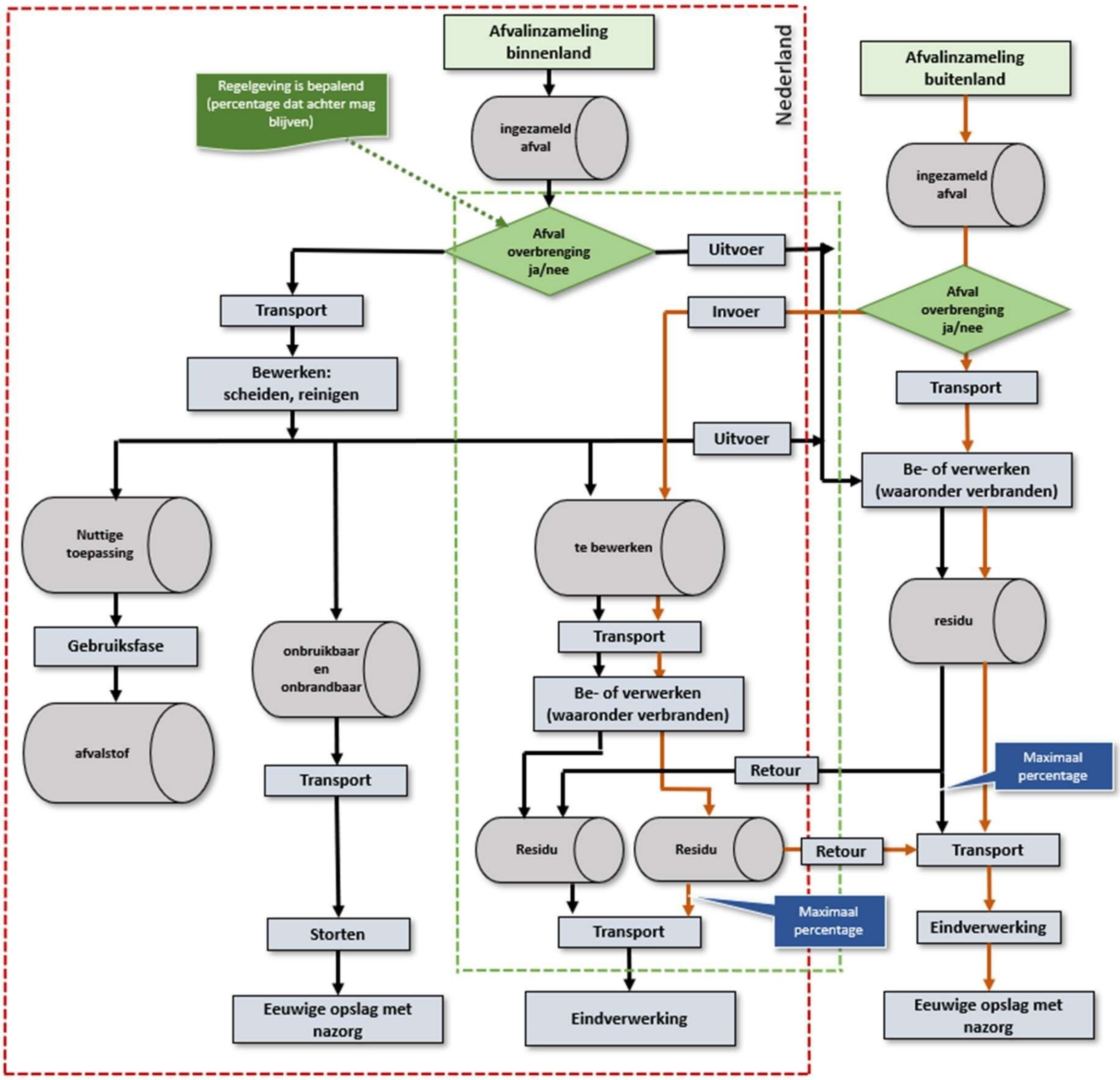

Figure 4.8: Process scheme for Alternative IIIc (red dotted line is the Netherlands and green line affects this alternative).

The dotted line shows the scope of this alternative as indicative, i.e. the sub-process where measures in this alternative have a primary impact. The impact assessment describes relevant impacts across the system.

4.4.2 Impacts and assessment of alternative III.c

Target achievement and environmental impact

In the approach adopted to impact assessment and determination, the differences between alternatives III.b and III.c are small in terms of the target circularity and target range of effects, and the environmental effects. Therefore, for the description and assessment, see Section 4.2.2. On balance, there will be no significant changes in the various aspects and minimal differences between them.

The slight difference between the alternatives is due to the fact that the quantity of imports and exports consists of a small number of large flows and a large number of small flows. Given the purpose of the alternatives, it is not logical to use a percentage for the large streams, as this will result in virtually no effect on the target area (less landfill).

Realisability

The differences between alternatives III.b and III.c are due to the differences in the steering mechanisms in the two alternatives. Alternative III.b is based on a rigid system that requires residues to be traced back to the country of origin for all operations and all flows. Alternative III.c may be differentiated. The assessment of the realisability of alternative III.c is presented in Table 4.6.

Table 4.6: Assessment of the realisability of alternative III.c

Feasibility	Feasibility and enforceability (government)	Legal enforceability	0
		Practical enforceability	-
		Financial enforceability	0
		Costs for the public administration, direct and indirect and/or longer-term	0
	Feasibility and compliance (market)	Practicability practical	-
		Compliance with practical	-
		Financial compliance	0
		Economic feasibility	-

This alternative is feasible for the administration. The CMP1 provides framework conditions for controlling the recovery of the residue. In the current situation, cross-border waste streams are also regulated and enforced. However, the complexity of the approach is raised by the alternative, because of the level of notification that can be maintained more specifically and intricate. In relation to this, it is expected that the specific identification of the x per waste stream (which waste streams, which percentage) will not be a simple task and will therefore require time and effort. On the criteria of legal, enforceability and financial viability, this alternative scores neutral (0) in comparison to the baseline situation. In the long term, there will also be no additional costs for the administration, which means that the alternative scores in a neutral way (0). Compared to Alternative III.b, this alternative requires a little more effort in the context of enforcement. This is because the scheme is less unambiguous than under Alternative III.b (and than the reference situation) and may therefore also give rise to creative accounting. On the other hand, as some flows no longer require enforcement, the enforcement effort may decrease.

In this alternative, there are several aspects that require short consideration. This is necessary to make a proper comparison with the baseline situation and with alternative III.b.

First, it is necessary to consider how small the limit value x should be in this alternative. As also indicated in the ETD, it is important, on the one hand, that as much residual material as possible should be returned to the country of origin (in order to reduce landfilling), but on the other hand, the mandatory return of residual material should not become an administrative burden or cost of such a magnitude that it frustrates innovative techniques with a positive contribution to circularity. Of course, in terms of reducing landfilling, the greatest gain can be gained from the waste stream/action combination, with a relatively large amount of residue and a large amount (in tonnes per year). For these flows, it is obvious to keep the limit x small, provided that this does not unnecessarily restrict access to specialised processing facilities.

An additional effect of this alternative could be to encourage processors to make efforts to reduce the amount of residue. This is because reducing the amount of residue below the limit x to an additional processing step allows wages to be paid.

In addition to the quantitative aspects, when setting the limit x, the composition (impurities) of the residue can also be considered.

For the market, this alternative is more effective. The ability to comply with legal obligations (e.g. required contractual assurance), costs and available capacity play a role in determining the processing and the processing location. Transport costs are also part of the balancing of costs. In current practice, cross-border transport and processing are carried out because of the cost-benefit nature of these operations, as well as the quality of the processing. The obligation to recycle residue may lead to different choices. For example, less waste can be offered from abroad to our WIPs because the obligation to recycle the residue entails additional costs, making incineration in the Netherlands less attractive. It is also for this reason that waste processors in border areas may waive treatment options close to them on the other side of the border. The economic feasibility of the alternative will therefore be assessed as negative (-). The comparison with Alternative III.b may show a more negative assessment of the impact of Alternative III.c.

The practicality for the processors has also been assessed negatively (-) in this alternative. In addition to the administrative burden, there will also be a lack of clarity as to which stream produces what residue, as in general different streams are processed simultaneously.
For all other criteria (compliance with practical and compliance with financial), there are no issues that have an impact on enforceability. The scores for the alternative are neutral (0).

5. Review

5.1 Summary of impacts

Chapter 4 of this report describes the impact of the two alternatives and provides tables for each alternative. An overview of this assessment is presented in Table 5.1. Clearly, the description of target achievement and impact is based on assumptions and considerations. As a result, the assessments are uncertain. As already pointed out in Chapter 4, the actual impact in practice is highly dependent on how the market will respond. Having regard to the (market) mechanisms that may have an impact on costs also lead to uncertainty in the assessments.

Table 7.1: Overview of assessments

	Change in use of raw materials	Efficient use of primary raw materials	0	0
		Ratio of renewable – non-renewable raw materials in products	0	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher grade in the waste hierarchy (higher quality processing)	0	0
		Share/percentage of substances remaining at the same level in the waste hierarchy	0	0
		Share/percentage of substances moving to a lower level in the waste hierarchy	0	0
	Impact on the quality of	Applicability	0	0

	secondary materials, including in a possible next cycle of recycling	Returnability	0	0
		Workability	0	0
	Contribution to reducing stor ten/burn	Landfill volume per year	+	+
		Amount of incineration per year	+	+
Environmental impact	Greenhouse gas emissions	Greenhouse gas emissions	+	+
	Energy use	Use of fossil fuels	-	-
		Energy use	-	-
	Water use	Water use	0	0
	Nitrogen emissions	NO_x and NH_3 emissions	-	-
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	+	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+	+
Realisability	Practicability and enforceability (government)	Legal enforceability	0	0
		Practical enforceability	-	-
		Financial enforceability	0	0
		Costs for the public administration, direct and indirect and/or longer-term	0	0
	Feasibility and enforceability (market)	Practicability practical	-	-
		Practical enforceability	0	-
		Financial enforceability	0	0
		Economic feasibility	-	-

5.2 Full assessment and review

Both alternatives will result in a decrease in the amount of material to be landfilled in the Netherlands, compared to the baseline situation with a higher import than export. However, the impact is limited. This is because, for many transferred flows, the amount of residue to be landfilled is relatively limited. Moreover, returning residue to the Netherlands and returning residue abroad may partly cancel each other. However, within the same stream, there may be a large difference in the amount of residue depending on how it is processed after shipment in the country of destination. Processing operations in the home country may result in less waste transport. This is positive for the use of energy and for the emission of greenhouse gases and nitrogen oxides. Furthermore, the information on IM and IC, which forms the basis of this analysis, is based on current policies.

The risk assessment for the spread of contaminants is positive. It should be noted that, compared to the reference situation, the amount of waste that is recovered may decrease if less waste is imported due to the obligation to re-export the residual flows. This also means that the amount of contaminants that can be present and remain in the destination country in immobilisates and in formed building materials with residues as aggregates will decrease compared to the reference situation. This can also be seen as a positive environmental impact for the longer term.

In practical terms, both alternatives are problematic. These are related to the fact that, at least for the waste streams treated by operation R1 incineration, it will not or hardly be possible in practice to transport the residual streams derived from the waste sent back. Indeed, the waste is mixed with other waste streams in the processing process. The alternatives will also result in additional administrative burdens for the market and public authorities.

Overall, the two alternatives appear to make a relatively small contribution to the ambition of reducing the amount of material to be landfilled in the Netherlands and the self-sufficiency objective. As a result of Alternative III.b, less waste for incineration is imported, a decrease in the amount of immobilisates or incineration residues is to be expected. For the Netherlands, this means that more contaminants are kept out of the cycle.

Alternative III.c thereby provides the possibility of more flexibility for specific flows and processing techniques in managing the obligation to return residual flows. This can be beneficial in enabling more high-quality processing of (part of) the many, relatively small waste streams.

The practical challenges posed by both alternatives to the public administration and the market make it difficult to establish clearly whether a positive impact on the high-quality processing objective can be expected.

As an alternative solution, it has been proposed to ban imports or exports if more than a certain percentage of the waste stream in question will be landfilled. The question is whether this is legally possible. On the one hand, this alternative is clear and relatively easy to implement (e.g. no checks are required or residual flows are actually being returned), but on the other hand, the proportion that will be paid in must be clear for each party. This may come up against practical problems. In the waste processing sector, such import bans may be unfavourable, due to the reduced flexibility and scope to optimise the use of the capacity of the processing plant.

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EIA Circular Materials plan

Part Report 4:
Minimum standard general, boost front runners

Antea Group

Understanding today.
Improving tomorrow.

project number 0483395.100
revision Final
21 June 2024

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Circular Materials Plan EIA

Part Report 4: Minimum standard general, encouraging frontrunners

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1. Introduction

1.1 Circular Materials Plan

The current National Waste Management Plan (LAP3) expires at the end of 2023 and will therefore be revised. This revision is accompanied by a shift in emphasis. The LAP focused on good waste management, while the (first) Circular Materials Plan (CMP) increases the ambition to retain raw materials for as long and as long as possible and to reduce the use of primary raw materials as much as possible. The CMP is therefore more in line with the transition towards a circular economy than the LAP3.

The environmental impact assessment procedure and the environmental impact assessment (EIA), as a product, provide an objective picture of the environmental impacts of a number of policy choices. The EIA is a separate product from the CMP. The EIA provides information enabling policy choices to be made under the CMPs.

Six policy options examined their environmental impacts and included them in six separate sub-reports. The overall environmental impact assessment (EIA) has been prepared on the basis of these sub-reports.

The study of the functioning of the alternatives and their possible impact involved, for example, drawing on the knowledge and experience of a number of experts in the form of an expert team consulted several times. Where specific information from (members of) the expert team has been used, this is explicitly mentioned. The use of the expert team's input has been further detailed if necessary.

The content of this report is the responsibility of the authors.

This **Part-report 4** concerns the section '**Minimum standard general, stimulation of frontrunners**'.

1.2 Minimum standard general; encouraging front runners

The minimum standard instrument in LAP3 is the assessment framework for the authorisation and non-authorisation of waste operations. It is a lower limit and defines the minimum amount of processing that can be carried out.

As permitting lower quality than the minimum standard is not permitted, raising a minimum standard – for example from incineration to recycling – is generally only appropriate when there is sufficient capacity to actually recycle the waste stream in question in a quantity that is released in the Netherlands. An increase in the minimum standard also implies the need to update existing permits to the new minimum standard. This makes the minimum standard an excellent tool for giving those lagging behind a push, but less suitable for encouraging frontrunners who already 'outperform the minimum standard'. Indeed, if a more high-quality form of processing is more expensive than processing under the minimum standard, the fact that the competitor remains authorised to work under the minimum standard may actually work against the front runners.

This point was explicitly mentioned by the State Secretary for Infrastructure and Water Management in the letter to the Parliament of 25 January 2021. Therefore, the desire is to increase the use of the minimum standard as a stimulating tool, where possible.[156]

The focus of this topic is mainly on waste streams for which landfill/incineration is now considered a minimum standard, and where it is already technically possible to increase to recycling. It is also possible to include a more high-quality form of recycling for a waste stream for which a low-grade form of recycling is now the minimum standard.

Rijkswaterstaat suggested a number of waste streams that are of interest for increasing the minimum standard and encouraging frontrunners: residual waste from households and businesses, process-dependent industrial waste, paper and cardboard, textiles, carpet, bio-waste, GFE, swill, green waste, plastics, tapes, other rubber, fibre cables, water purification sludge, waste incinerator bottom ash, residues from energy extraction from biomass, GBSA, aerated concrete, roof waste, wood, asbestos-containing material, WEEE, solar panels and EPS.[157] In addition, the expert team provided some examples of materials that could be potentially used to speed up the measure, referred to as PMD, diapers and VGF.

1.3 Synopsis

156Note on the scope and level of detail for the environmental impact assessment for the Circular Materials Plan 1.0

157 Raising the minimum standard earlier. Rijkswaterstaat.

Chapter 2 describes the assessment framework and how the impacts on alternatives are presented. Chapter 3 describes the baseline situation. Next, Chapter 4 describes the alternatives and their assessment[158]. Finally, Chapter 5 presents a full discussion of the alternatives.

2. Assessment framework

2.1 Introduction and overview

158 The structure of Chapter 4 is different in the partial report from that of the others. This has been done because the chosen approach to impact assessment is to ensure that the difference between the alternatives is only present in the topic. This will allow the alternatives to be dealt with jointly in the target areas and environmental impacts.

The assessment framework is set out in the Note on the scope and level of detail (NRD) for this EIA. Following the input and advice received on the ETD, some adjustments have been made to the assessment framework and have been incorporated in the final ETD[159].

In the context of the preparation of this EIA, the evaluation framework was further elaborated and some adjustments were made, also following the first finger exercises with the impact assessment and comments made in the expert meetings.

The main changes made to the assessment framework in the NRD are:

1. A level of aggregation has been added and the aspects and sub-targets are below that level. This leads to a two-topic format focusing on objectives and target ranges, respectively on circularity target and landfill and incineration target range, on environmental impacts and on feasibility.
2. In the target achievement topics, the second level of aggregation consists of sub-targets and in the topics of environmental impact and feasibility the second level of aggregation consists of aspects;
3. Some aspects are formulated in a slightly different way than in the NRD; for example, in the case of raw materials, all raw materials (and not only renewable or recyclable) are considered, with the ratio of renewable and non-renewable attention;
4. The feasibility theme has been divided into feasibility (involving the government) and feasibility (how market players can deal with the measures included in the alternatives); this difference between the government and the market is important in making the assessments of how the alternatives will work in practice. This is because businesses operating in the market play an entirely different role to that of public authorities. This is because operators make daily choices about the way materials are processed (cleaning or immobilisation), but also make choices about investments in treatment and processing capacity.
5. Some aspects have been added, namely energy use, water use and consumer market.

This leads to the assessment framework as shown in Table 2.1 and Table 2.2. This classification, comprising four topics and a total of 11 sub-objectives and aspects, was also used in the summary assessments of the alternatives. A higher number of indicators have been identified under the sub-targets and aspects. These are explained in section 2.2.

Table 2.1: Target Scope Assessment Framework

	Efficient use of resources
	Stimulating high-quality waste processing
	Impact on the quality of secondary materials, including in a possible next cycle of recycling
	Contribution to reducing landfilling and incineration

159 Reaction Note on Views – NRD for Environmental Impact Assessment for the Circular Materials Plan; Ministry of Infrastructure and Water Management, January 2023

Table 2.2: Impact assessment framework

Environmental impact	Greenhouse gas emissions
	Energy use
	Water use
	Nitrogen emissions
	Risks to man and the environment from spreading harmful substances
Realisability	Practicability and enforceability (government)
	Feasibility and compliance (market)

The NRD indicates that when assessing the alternatives (per component), specific effects or concerns are manifest that are relevant for the assessment, but are not included in the assessment framework. Where relevant, the assessment framework may be supplemented by specific indicators.

Rating scale

A five-point scale (Table 2.3) is used to assess target achievement and impact. The assessment is always relative to the baseline situation, also referred to in this report as the base case.

In principle, the assessment is qualitative. Where possible, it is supported by (semi)quantitative evidence.

Table 2.3: Rating scale

	betekenis
++	zeker en substantieel positief effect
+	vermoedelijk en/of beperkt positief effect
0	neutraal effect
-	vermoedelijk en/of beperkt negatief effect
--	zeker en substantieel negatief effect

1.1 Further explanation on the assessment framework

Circularity target range

The indicators for this topic are presented in the diagram below (Table 2.4) and briefly explained. The order of the sub-targets and indicators is not indicative of the importance or weight. The starting point for the assessment is that, in principle, all indicators are of equal importance. Criteria weighting is applied in the context of further policy-making within the CMP. This part of the assessment framework relates to objectives and sub-objectives and has been defined accordingly. The underlying objectives of the policy are essentially to keep (soil) substances in the cycle as much as possible and to remove and retain pollutants from the cycle as much as possible. The latter can be done either by destroying contaminants (by burning or destroying them) or by dumping them in such a way as to prevent, as far as possible, any propagation into the environment, including in the long term.

The target achievement is divided by two dimensions relative to the NRD. The sub-targets for landfill and incineration have been addressed in their own context. Dumping and incineration inevitably result in material disappearing from the cycle. A first analysis showed that the circularity and

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for landfill/incineration, the opposite may be true, which could lead to loss of information when aggregating the supply and level assessments.

Table 2.4: Circularity sub-targets and indicators

	Efficient use of resources	Efficient use of primary raw materials	The less use of (primary) raw materials, the better. The rationale behind this is that primary raw materials are finite, and that the extraction and transport of primary raw materials can have significant (negative) environmental impacts.
		Renewable – non-renewable raw material ratio in the cycle	The larger the ratio of renewable – non-renewable raw materials in the cycle, the better.
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	This involves moving up as much as possible: for these indicators, the higher the hierarchy, the better. In scoring this indicator, attention is paid to the potential overlap with other indicators (in particular, 'use of primary raw materials'). Due to the relatively gross division of the waste hierarchy, a distinction is also made within the steps
		Share/percentage of substances which remains at the same level in the waste hierarchy or within the same level in a higher quality	
		Share/percentage of substances moving to a lower level in the waste hierarchy	
	Impact on properties of secondary materials, including in any subsequent cycle of recycling	Applicability	If the secondary material is applied. This indicator evaluates whether the qualities of the secondary material are such that it is possible to apply them properly.
		Returnability	At the end of the period of use. This indicator looks at the 'ease' that can be achieved at the end of the period of use – after a raw material processing has been employed in the cycle. In order to do so, the qualities of the secondary material concerned must be such that they can be identified and taken back

		Workability	It is also important that the secondary material can be processed responsibly at the end of the period of use.

As part of the assessment framework, the '**high-quality'** of waste processing is examined. Further specification of the concept of 'high quality' is necessary to make this assessment effective. This report is based on the sole consideration of waste and the waste hierarchy is guiding the assessment of quality. This means that reuse (such as collected and reused beer bottles) is not considered. Depending on the efforts needed for reuse and its (environmental) impact, reuse will almost always be more positive than (high-quality) recycling. This also follows from the waste hierarchy.

Within this framework, the focus of this report is on the '**Raw Materials Conservation' aspect**. As indicated above, the basis of the waste hierarchy is decisive. Within the same step of the waste hierarchy, this report refers to higher-quality forms of recycling whenever material is as much as possible and

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maintained in a material or product chain for as high quality as possible over as many cycles as possible.

Landfill and incineration target range

The indicators for this part of the target achievement of dumping and incineration are shown in the table below. The underlying objective for both indicators is to reduce the amount to be landfilled or incinerated.

Table 2.5: Sub-targets and indicators for landfilling and incineration

	Contribution to landfill/incineration restrictions	Landfill volume per year	The less, the better.
		Amount of incineration per year	The less, the better. The impact of substitute fuel was not included.

Environmental impact

To illustrate the environmental impacts of the alternatives, the assessment framework has identified four aspects, see Table 2.6.

Some overlapping indicators are included. For example, CO_2 emissions are related to the use of (fossil) energy sources such as oil, coal and natural gas. However, the individual indicators have been chosen as they do not completely overlap. For example, CO_2 emissions include sources other than fossil fuels (such as CO_2 released from cement in the production of concrete); and fossil fuels are also used as raw materials (e.g. in the production of plastics, see also Figure 2.1).

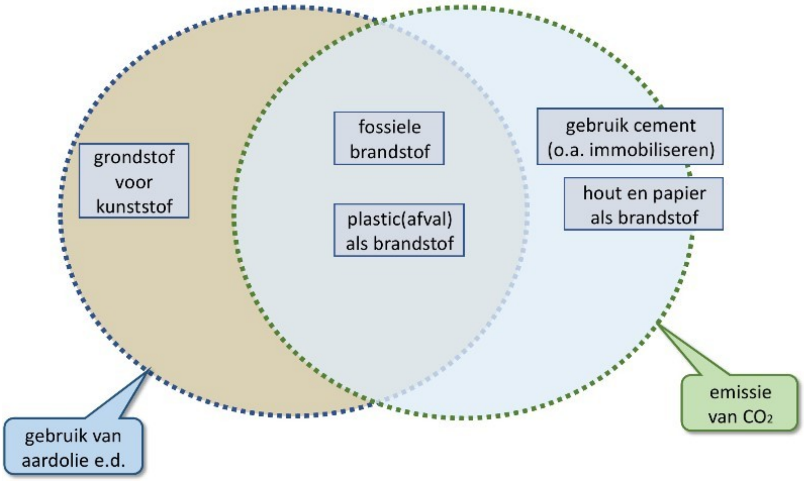

Figure 2.1: Relationship between CO2 emissions and fossil fuel use

For the use of energy, the indicator in question looks (only) at the energy use needed for the alternative in question (compared with the reference situation), for example for transport and for the processing operation in question. In line with the ‘trias energetica’, the underlying aim is to minimise the use of energy as a result of generating energy (fossil as well as renewable sources) has environmental effects. Moreover, this study did not specifically look at the potential for using non-fossil energy sources (and their impact on emissions).

For nitrogen emissions, it was decided to look at emissions rather than deposition. This has been done because the deposition site is bound, and nitrogen oxides are also relevant from an air quality perspective. The underlying aim is to minimise concentrations in the atmosphere and also to reduce nitrogen deposition in Natura 2000 areas.

Ultimately, 'risks to people and the environment' aim to minimise pollution (which may threaten the ecosystem and human health) and to minimise its spread to the environment. Keeping waste out of the cycle can involve destruction (e.g. by incineration or biological breakdown), controlled storage (in a landfill) or immobilisation of contaminants. The environmental effects of these forms of processing may also differ.

Table 2.6: Environmental impact aspects and indicators

Environmental impact	Greenhouse gas emissions	Emissions (in CO_2 equivalents)	Emissions per year, including from energy use, such as from transport and other processes through the release of CO_2 and others greenhouse gases The aim is to limit it as much as possible. In CO_2 equivalent/year.
	Energy use	Use of fossil fuels	Due to the use of fossil fuels as a raw material and as a source of energy. Minimise the use of fossil fuels
		Energy use	Reducing the use of energy and water is positive in itself (as it also reduces the need for energy generation, water extraction, etc.). The less, the better
	Water use	Water use	
	Nitrogen emissions	NO_x emissions	Emissions instead of deposition
		NH_3 emissions	
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of contaminants into soil, (ground) water or atmosphere	It looks at the various parts of the chain. These are potential emissions from processing, incineration, landfill or use of materials as building materials. The time scale and mechanisms by which dispersion may occur are important, i.e. both during secondary use (leaching, erosion, etc.) and at the end of secondary use (crushing, grinding, etc.)
		Contribution to reducing exceedance of standards in soil, water and air quality	Chain of Use, Life Cycle Human health risk assessment (via drinking water, food, atmosphere)

Realisability

For the assessment of alternatives, it is relevant to assess how the alternatives will work in practice. This is referred to as 'feasibility' (Table 2.7). Therefore, the feasibility, enforceability and economic feasibility of the alternatives have been considered. It is important to note the extent to which the **authorities** can implement the alternatives, the effort required and the costs involved. It is also relevant how the businesses operating in the **market** and required to implement the planned policy in practice can benefit from the measures envisaged, such as those contained in the alternatives. This will also give you an idea of how and to what extent alternatives will work in practice.

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Table 2.7: Aspects and indicators realisability

Realisability	Practicability and Enforceability (government)	Legal enforceability	It is legally possible; it is legally possible for the authorities to actually take the relevant measures (regulations, etc.).
		Practical enforceability	It assesses the practical feasibility of organising enforcement by the public authorities
		Financial enforceability	This relates to the costs of enforcement for the public authorities
		Costs for the public administration, direct and indirect and/or longer-term	For example, costs for damage to the environment and damage to health
	Practicability and compliance (market)	Practicability practical	It is available, has sufficient capacity and can be accessed. This includes opportunities and risks: how does it work in practice for the market?
		Compliance with practical	This will assess whether, in practice, it is possible to meet market compliance conditions
		Financial compliance	Costs for fulfilling market conditions
		Economic feasibility	These are the costs and benefits of the processors operating in the market. Costs are determined by capital charges and operational costs (including charges). The benefits are generated by the sale of secondary (land) materials, energy, subsidies, sales market, etc.)

1.2 Assessment method

To allow the assessment of the impacts of the alternatives, a number of principles have been chosen. These include:

1. Separation of focus, impact and realisability assessments;
2. The way the effects of substituting materials and energy are to be taken into account; 3. Reference situation to be used.

These principles are outlined below.

Impact assessment targets and effects: no adjustment to realisability

The evaluation of the impact of policy measures on the ground is an important consideration in the assessment of alternatives. After all, the final environmental impacts, and the degree to which it contributes to the achievement of the objectives, are the result of the combined 'technical' impacts of the policy options (for example, CO_2 emissions from a particular policy option) and the 'success' of the policy option in question on the ground. On balance, a policy measure that is technically highly beneficial but not implemented in practice (for example because it is not economically feasible) will have little effect. In order to avoid double counting of impacts, but also to be able to make a proper balancing and possibly take additional measures, the approach taken in this EIA is as follows:

1. To assess target achievement and environmental impacts, the technical content of the policy option involved was considered. These include, for example, the composition (level of pollution) of component streams, the use of energy and water in techniques needed for the policy option, and emissions of nitrogen oxides and CO_2. To this

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The assessment does not take into account the extent to which the technique in question will actually be deployed. This may mean that the assessment shows a best-case situation, either in part or in full.
2. When assessing the aspects within the topic, it is important to check whether the policy option in question will be implemented in practice and to what extent, in practice, this option will lead to a different use of techniques and processes (compared to the baseline).
3. Assessments for the individual aspects are summarised, followed by a final assessment, which explains and discusses the effects on the environment and realisability, for each alternative and topic covered. These considerations will explain whether and to what extent the target-range and impact assessments are influenced by the realisability assessments.
4. This approach helps to identify possible dilemmas and follow-up questions for each part, as policy options can be promising in terms of content but are inhibited by realisability issues, and in this case, the potential for greater realisation can be addressed. This can be illustrated in Figure 2.2. The assessment of the impact on the two axes has been done independently.

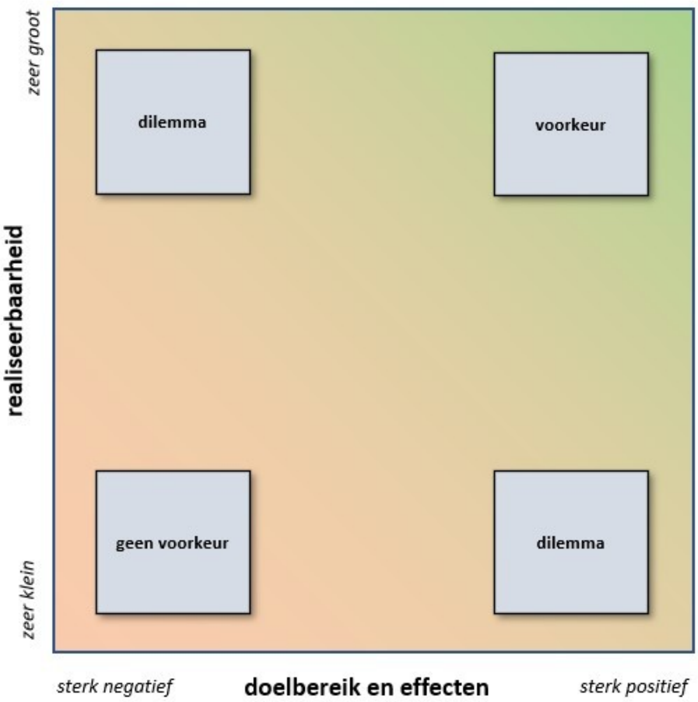

Figure 2.2: The ultimate desirability of alternatives is determined by target achievement and effects (horizontal axis) and feasibility (vertical axis)

Effects of substitution

This study looked at the effects of alternatives to substitution of materials and energy. For example, if the amount of waste to be incinerated decreases (due to a measure), the use of other energy sources (fossil and/or renewable) will increase, and if secondary material use increases, the use of primary material will decrease. When describing the environmental impacts of the alternatives, it has been described (where relevant) whether there may be second order environmental impacts. Where relevant, these have been included in the impact assessment. For example, if an alternative causes less waste to be incinerated or the calorific value of waste to be reduced has been considered as a consequence of the need to use other energy sources.

Reference situation

The effects of the alternatives are described and compared with the baseline situation, also referred to as the base case. The baseline is based on the current policy and the

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applicable rules, without taking into account any deviations that may occur in practice. No evaluation of current policies and regulations was carried out under this EIA. In this report, we use the term 'reference situation'.

3. Reference

3.1 Policy and Regulations

According to current policy, a new form of processing may result in an update of a minimum standard when a number of conditions are met. Important criteria for this have been set out in LAP3 D.2.3 and are as follows:

a. the quality of the new processing method is, as demonstrated to the satisfaction of the Minister, significantly higher than that of the current minimum standard;
b. there is a non-landfill market for the materials remaining after processing;
c. the new processing method does not cost the waste eliminating party more than EUR 205 per tonne; exceptionally, the Minister may derogate from this where the environmental benefit obtained or the price of alternative processing methods for the same waste gives rise to this;
d. the new processing method functions properly (proven technology);
e. the new processing method is in principle available or achievable in the Netherlands in sufficient capacity; capacity abroad will in principle only be taken into account if the volume of waste produced is limited and it is not worth realising a separate processing capacity domestically. A prerequisite here is that sufficient and accessible capacity is available abroad.[160]

In order to adapt a minimum standard, a planning amendment procedure, including a public participation, will be followed. Where the sectoral plans contain a future outlook for the minimum standard, this will not really constitute the licensing framework until the LAP/CMP has actually been amended. In the interest of uniform policy implementation, it is not intended that competent authorities should already use the forward looking framework on their own initiative (unless an applicant requests a permit). If a minimum standard is amended, the competent authority must also update the permits within one year of their entry into force, pursuant to Article 5.10 of the Besluit omgevingsrecht – Bor (Environmental Law Decree).

However, this does not always mean that the business activity must also be adapted directly. Changes to the LAP/CMP may include a transitional period depending on the nature of the change. This period may take into account, inter alia, investments made in existing
forms of processing. It is important to note whether the amendment in question had already been announced in the future outlook of the sector plans or not. After all, with announced modifications, companies can take longer into account when making investments in new facilities or processing methods.[6]

Figure 3.1 shows the baseline situation for this topic, as described in the previous paragraphs. Figure 3.2 is the legend applicable to Figure 1 and the following master diagrams.

160https://lap3.nl/publish/pages/121404/lap3_d02_minimumstandaard_02-03-2021.pdf[6]
https://lap3.nl/publish/pages/121404/lap3_d02_minimumstandaard_02-03-2021.pdf

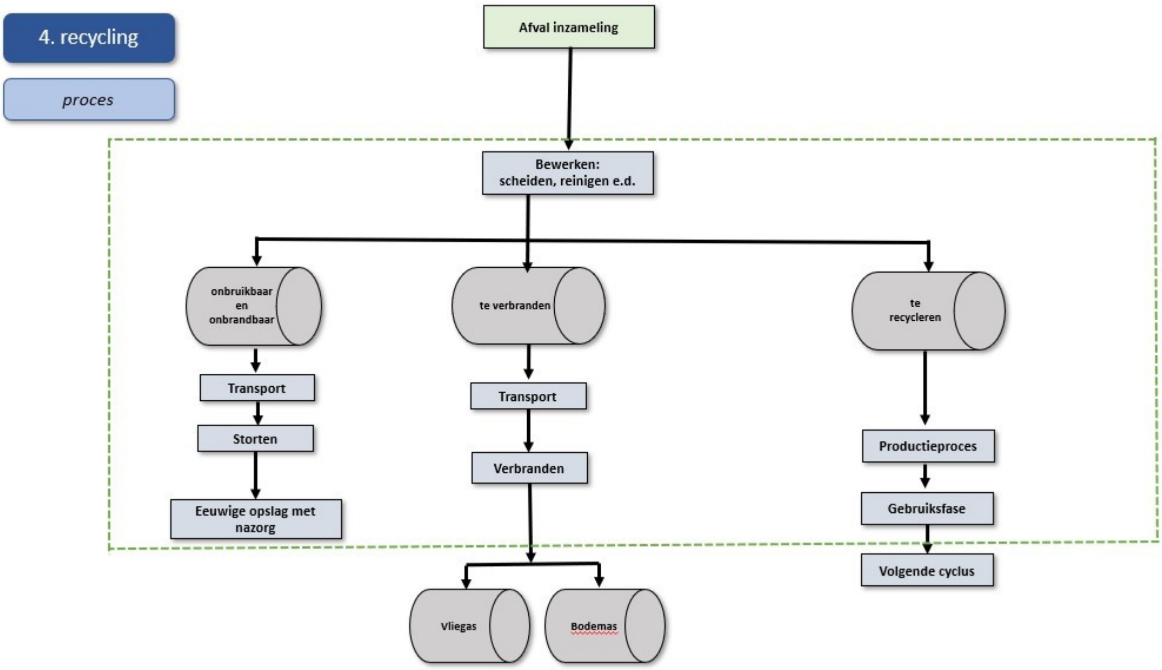

Figure 3.1: Driving the front runners by the process scheme for the topic covered by the policy

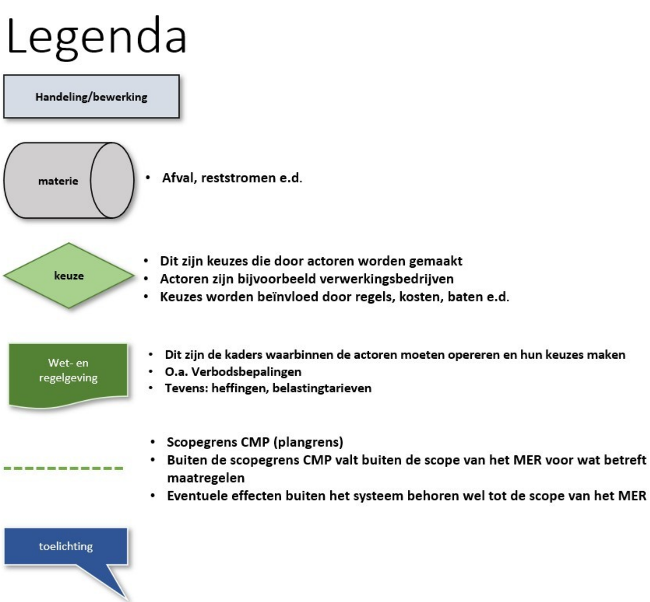

Figure 3.2: Legend of process and steering diagrams

3.2 Autonomous developments

As long as the waste processor or recycler does not know what kind of useful materials are present in waste and/or how they can be removed from the waste stream concerned, and/or there is a market for the separated useful materials, separation and processing remain too uncertain and cost-intensive. As a result, a large part of the waste is currently treated in a low-quality manner (landfilling and incineration). However, methods to collect better, more cost-efficient waste and methods to post-separate waste more efficiently and more efficiently are increasingly being sought. At the same time, product design and production increasingly take into account the waste of the product. This means that products are increasingly suitable to be recycled. As a result, the quantity and share of waste that can be recycled is increasing.

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The topic of waste processing is wide-ranging and highly heterogeneous. The possibility to increase the minimum standard is highly dependent on the flow. Each stream has its own characteristics and the associated opportunities, challenges and risks, while some streams for which the minimum standard is not currently recycling are considered in order to gain a picture of this topic, where technically possible. These are the flows carpet, other rubber (excluding car tyres) and cellular concrete.

For the carpet and other rubber flows, the current minimum standard is (other) recovery. For the autoclaved aerated concrete stream, the current minimum standard is landfilling. There are ongoing market and public sector initiatives (policies) for these sample flows to increase recycling. Market initiatives are very diverse. This includes both steps in the development of processing techniques and steps in the production of articles, including increased use of secondary material. Not all initiatives are technically and financially viable. It may, however, be stated that the consideration of increasing the minimum standard is appropriate in ongoing developments.

Important prerequisites for increasing recycling are the availability of a well-functioning recycling process, sufficient recycling capacity and a sufficiently large sales market. New initiatives become viable once the initial (often high) investments are recovered. In this context, the volume and experience of recycling flows will increase and recycling capacity will increase. In addition, the recycling process should be cost-efficient. The cost of delivery to the processing operation should be less than 205.00 euro per tonne. If the amount is higher, a downward departure from the waste hierarchy is allowed for the specific waste streams notified under the minimum standard.

An analysis of these flows may lead to challenges in raising the minimum standard, which are generic in nature and therefore applicable to several flows.

- A first set of challenges, for example in the case of rubber, are **logistical challenges**. Logistical difficulties arise when the flow is small, widely dispersed and handled through several disposal routes[161]. This makes the process of achieving sufficient recycling capacity in a certain location more challenging, as additional transport movements for relatively small volumes involve relatively high costs. On the other hand, there are opportunities for car tyre processing. The supply of tyres is high, which means there are no logistical challenges. End-of-life tyres are now incinerated, while treatment is possible.
- **Qualitative challenges** also exist. Nowadays, a product, such as rubber, often has several additives that can optimise its use[162]. Examples include sulphur and cross-linking agents (to promote mechanical properties), carbon nanotubes (to improve electrical conductivity) and antioxidants and UV stabilisers (to prevent degradation of quality). These additions may differ for the specific type of finished product. As a result, it is more difficult to separate and process the different components. The specific challenge is then the development of generic processing methods that can process different types of products within a waste stream. This also applies, for example, to carpet.
- There are high investment costs for post-separation in certain flows. This is the case, for example, with household and business waste. Separation at the source can also be costly in cases such as optical fibre cables. These high costs mean that (higher quality) processing is often not technically feasible.
- Illegal export of waste is another challenge. This is the case, for example, with waste electrical and electronic equipment. For frequently encountered streams, where increasing the minimum standard would be possible, exports would first have to be avoided.
- Finally, there are **environmental challenges**. Recycling is economically and technically possible for aerated concrete, but the environment is not clear. These should be examined before

161https://lap3.nl/publish/pages/120604/lap3_sp11_kunststof_rubber_ow_1-1-2024.pdf
162Elastomer elastomers unmask the wonders of synthetic elastic polymers - MasterCapital

the minimum standard may be increased. In this context, the possible presence of Pose challenges to SVHC processors.

4. The alternatives

4.1 Overview of alternatives

There are two alternatives to this topic, where a more distinctive use of measures is made in combination with an increase in the minimum standard. Both alternatives have the same purpose, and only the form of implementation (how the objectives can be achieved) is different.

The first alternative is IV.b1 and reads: ***raising the minimum standard for new initiatives in combination with full load declarations.***
The second alternative is IV.b2. It reads: ***raising the minimum standard for new initiatives in combination with pricing***.

These alternatives reassess all the minimum standards that currently allow incineration. In this context, it will be considered whether recycling can be the minimum standard specifically for new initiatives. This may include a time frame for phasing out initiatives that work on the basis of the current minimum standard. It is important that waste processing companies that are already working under the new minimum standard receive a sufficient supply.[163]

The acceleration of the raising may mean both increasing the minimum standard to a higher level in the waste hierarchy and raising it within a step in the waste hierarchy. However, the focus of this study is on flows involving an increase in incineration to recycling.

The structure of this section differs from that of the other sub-reports. This has been done because (in the chosen approach to impact description and assessment) there is no difference between alternatives IVb.1 and IVb.2. In the interests of readability and consistency of the report, the structure in section 4.3 is based on the three sections in the assessment framework.

4.2 Description of alternatives

4.2.1 Alternative IV.b1

Alternative IV.b1 relates to raising minimum standards for new initiatives in combination with full load statements. **Incineration is only permitted in this alternative if all operators that could handle the waste stream in a higher quality had declared that they were at full load.** Consequently, before all operators have issued a full load declaration, processing capacity is always available and needs to be used. This may lead to additional transport between processors. It is not clear whether this will be more the case that what is already being done for transport to the WIPs.

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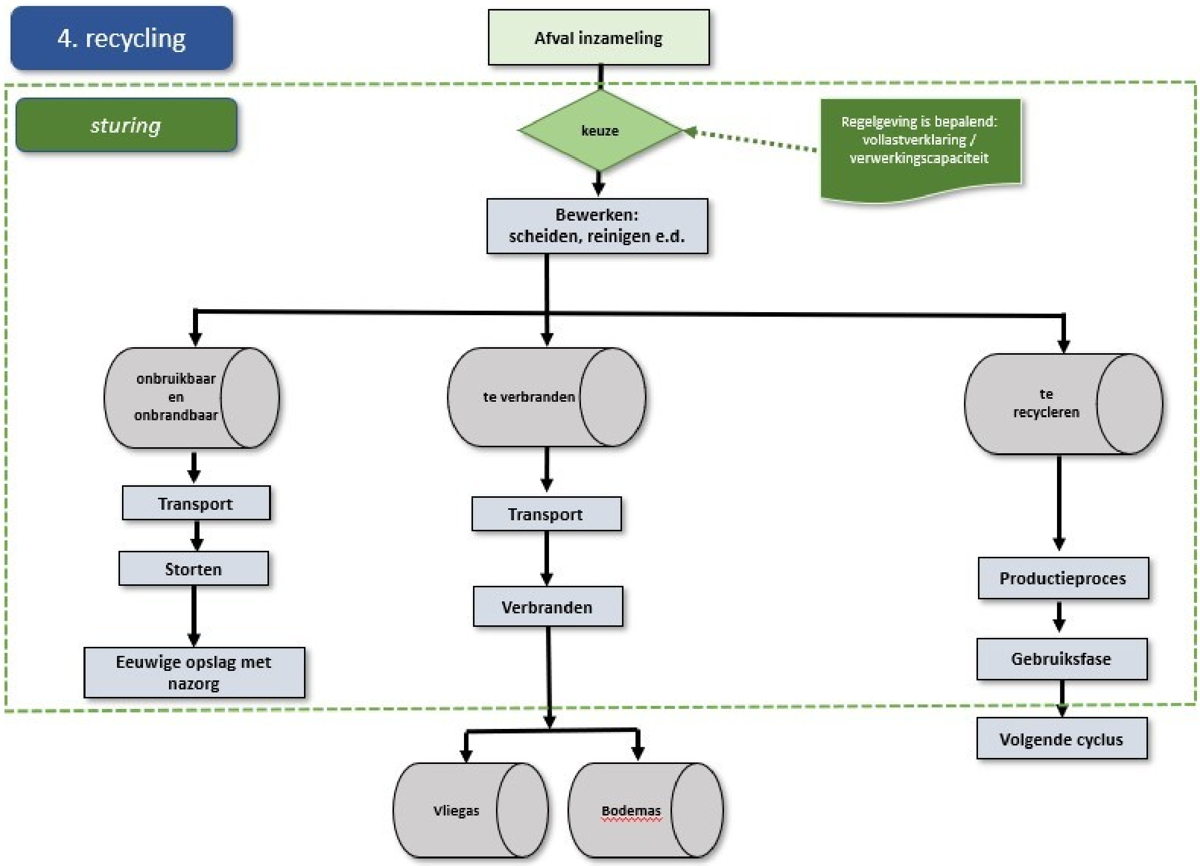

Figure 4.1: Process schedule Alternative IV.b1

In this alternative, the control chart in Figure 4.1 is relevant. This outline outlines the selection to be made after waste collection. After waste collection, the waste is treated by, among other things, further post-separation and cleaning. The process generates three main streams roughly: unusable and non-combustible material, material to be incinerated and material potentially to be recycled. In this regard, all material where recycling is technically feasible should be recycled in this alternative. It is only when recycling processors declare a full load that materials can be processed (at a lower value) by other means. Unusable and non-combustible materials are deposited and combustible materials are incinerated.

4.2.2 Alternative IV.b2

Alternative IV.b2 relates to raising minimum standards for new initiatives in combination with pricing. In this alternative, raising minimum standards is combined with sending prices (as opposed to Alternative IV.b1 where this is driven by full load declarations). The principle is that **incineration for the waste stream in question is more expensive than the new higher-quality processing**. This can be achieved either by increasing the prices for incineration or by reducing the costs of higher-quality forms of processing. In the event of an increase in incineration prices, the fee structure should be differentiated, with the rate aligned with the processing costs for the specific waste stream and the corresponding minimum standard. Another method is to reduce processing costs. This can be achieved, for example, by setting up a fund or subsidy, allocating available resources among the forms of processing in such a way that they are more favourable than the costs of incineration.

In this alternative, the process chart in Figure 4.2 is relevant. This outline outlines the selection to be made after waste collection. After waste collection, the waste is treated by, among other things, further post-separation and cleaning. The process generates three main streams roughly: unusable and non-combustible materials, materials to be incinerated and materials to be recycled. Here the prices are important. Prices are

This is the focus of this process. These are prepared in advance and regularly updated (depending on price increases/inflation).

In this alternative, price control may create a relationship with the production processes of waste providers. If the waste offered does not know that quality to be processed in the higher quality processing, the waste should be incinerated at a higher rate. This system may encourage collectors and sorters to work in a way that leads to more usable waste.

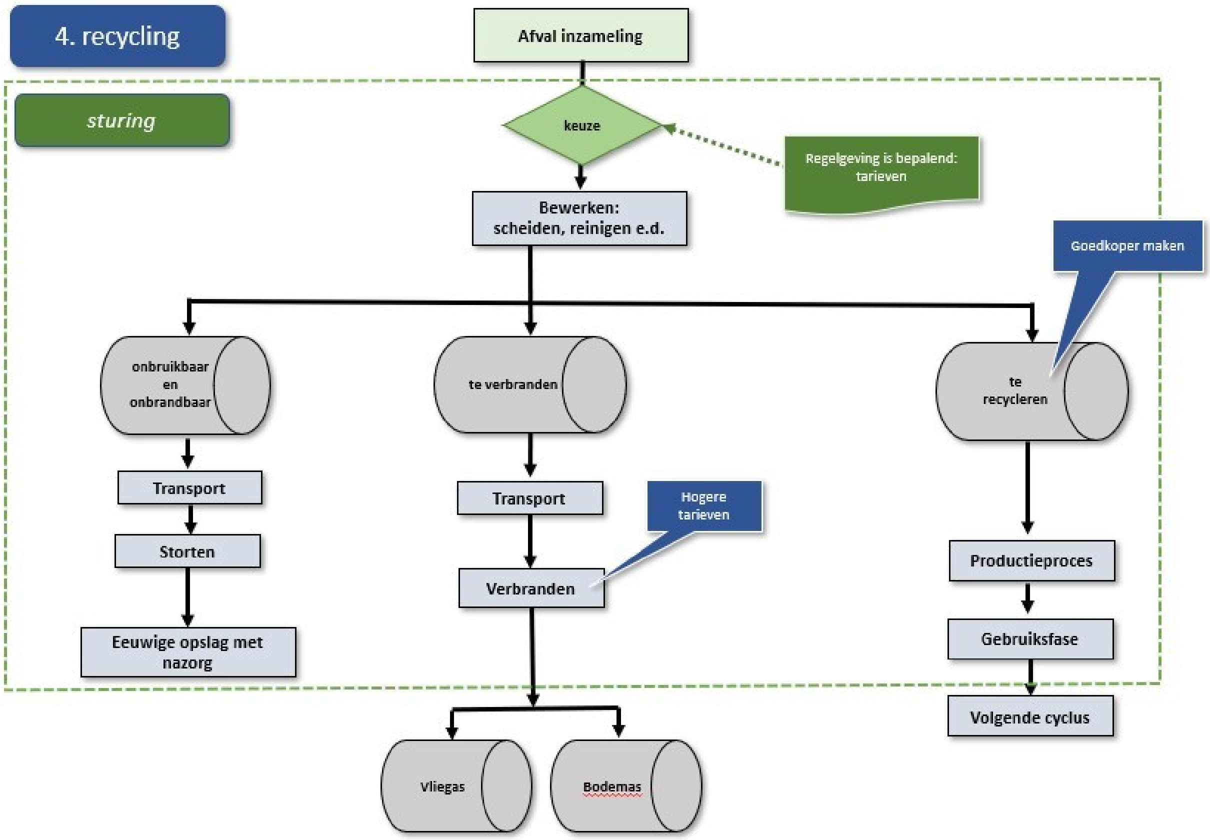

Figure 4.2: Process chart Alternative IV.b2

4.3 Impact and assessment 4.3.1

Target achievement

Circularity target range

Because of the chosen starting point for the impact assessment (as described in section 2.4), circularity is not different in the target range. Indeed, both alternatives aim at increasing the use of new techniques (which are the same in both alternatives) but differ in the toolbox for the change. The latter will be assessed in the theme of realisability.

The assessments are summarised in Table 4.1. The text below explains the assessments.

Table 4.1: Assessment of the circularity target of alternatives IV.b1 and IV.b2

	Efficient use of resources	Use primary raw materials	+	+
		Ratio of renewable – non-renewable raw materials in products	+	+
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	+	+
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	+	+
		Share/percentage of substances moving to a lower level in the waste hierarchy	+	+
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	+	+
		Returnability	++	++
		Workability	+	+

The **efficient use of resources** sub-goal has a positive impact. The alternative leads to more flows being further/processed. Specifically applying the appropriate increased minimum standard for each waste stream based on good (market) analyses is highly effective. This increases the quantity and share of secondary raw materials. This may reduce the use of primary raw materials. The losses that may occur in the chain (from extraction to the production of usable raw materials) due to the decrease in the use of primary raw materials also decrease. Examples include water use in cotton production or the use of other (primary) raw materials in the production of other usable primary raw materials. Recycling is increasing and losses due to landfilling and incineration are decreasing.

Assuming that, on balance, ***primary raw material use*** decreases among these alternatives, the assessment for this indicator is positive (+).

The essence of this is shown in Figure 4.1. On balance, the decrease in the use of primary raw materials is the counterpart to the decrease in the loss of substances from the cycle. These losses occur with the streams that are landfilled or incinerated.

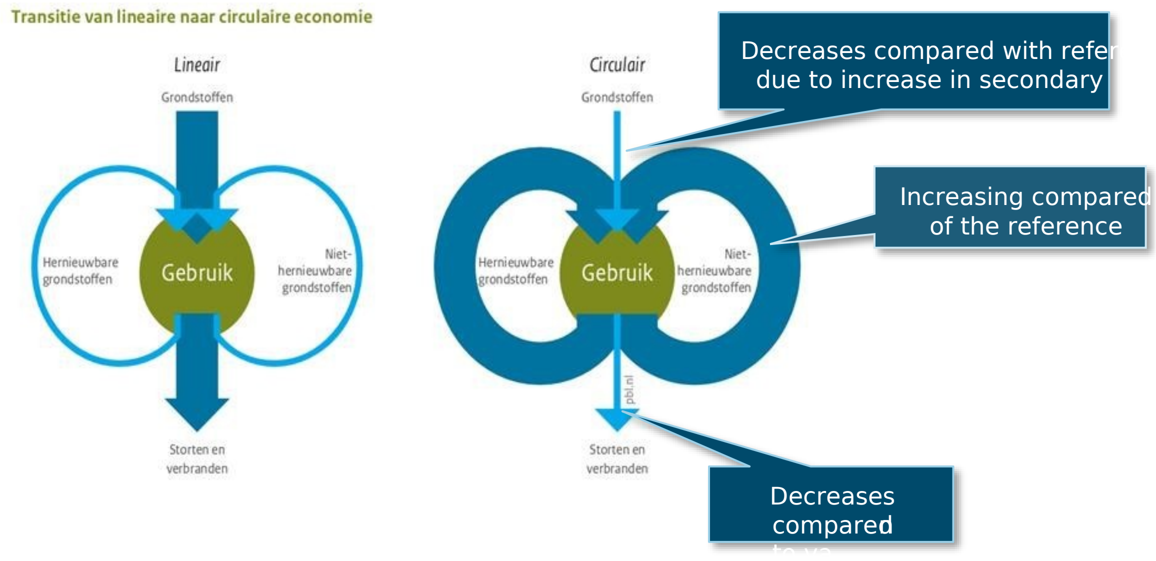

Figure 4.1: Impact of increasing minimum standard on the use of raw materials (source PBL 2016, edited)

There are some inherent renewable flows: green waste, bio-waste and water treatment sludge. Appropriate developments may lead to an increase in the minimum standard to recycling. It can also focus on the possibilities to shift more towards the use of renewable materials. All in all

this may have a positive impact on the ratio of renewable – non-renewable raw materials in the cycle. Both alternatives therefore have a positive impact on the ***ratio of renewable – non-renewable raw materials in products*** (+).

Overall, ***stimulating high-quality waste processing*** is beneficial for the sub-objective. The proportions of substances that are processed in a higher quality (both by a higher and within the same step) are positive (+). The proportion of substances processed in a lower step of the waste hierarchy decreases. Incineration and/or landfilling is reduced. This has a positive impact (+).

By encouraging more and higher-quality recycling, this alternative contributes positively to closing material cycles. The increase in recycling will directly improve the recoverability compared to the baseline situation. This is a very positive effect (++). Also improve workability and applicability (+).

Landfill/incineration target range

The assessment for this topic is summarised in Table 4.2. For this topic, as already explained in the circularity assessment, it can be observed that there is an overlap with the assessment of the 'efficient use of primary raw materials' indicator and the assessment of the impacts on landfilling and incineration. Indeed, with the constant demand for raw materials (the balance of primary and secondary), the decrease in the amount of waste to be incinerated and landfilled is comparable to the effect of a decrease in primary raw material use.

Both alternatives affect the quantity of material that is landfilled in several respects. By increasing the minimum standards (where the baseline situation allows for a collapse), this alternative will reduce the amount of the landfill. At the same time, the newly authorised processing operations generate residues (which also concentrate, where possible and relevant, contaminants). This fraction will not exceed the current situation. On the one hand, the entire product is recycled as much as possible. Some cannot be recycled and are therefore incinerated. Residues from this incineration are landfilled. If incineration is not possible, the non-recyclable part is entirely landfilled. It is unclear whether incineration as a whole is more or less than the incineration residue after recycling has been applied and the non-recycle and combustible content that is disposed of. Furthermore, the increased use of recyclates will reduce the use of primary raw materials, thus reducing the deposition of residual streams released from the extraction of primary raw materials and the purification of minerals into usable primary raw materials. These effects are difficult to quantify and will also occur outside the Netherlands, in part (significantly different for each raw material)[164]. Therefore, these effects were not taken into account in the assessment.

Table 4.2: Landfill target achievement assessment/links alternatives IV.b1 and IV.b2

	Contribution to landfill/incineration restrictions	Landfill volume per year	0	0
		Amount of incineration per year	+	+

There will be no significant difference in landfill volumes when both alternatives are implemented. Therefore, this impact has been assessed in a neutral (0) way in comparison to the baseline situation.

164 Such impacts are a major reason for circularity

The increase in minimum standards will in some cases result in the abandonment of incineration. Under increased minimum standards for specific streams, processing processes that generate residues that need to be incinerated will follow. However, this effect is so small that the whole amount of ***incineration*** is reduced and therefore positive (+).

4.3.2 Environmental impact

The approach adopted to describe and assess the environmental impacts (see Section 2.4) is similar between the two alternatives. Table 4.3 summarises the assessment of impacts.

Table 4.3: Assessment of the environmental impact of alternatives IV.b1 and IV.b2

Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents per year)	+	+
	Energy use	Use of fossil fuels	-	-
		Energy use	-	-
	Water use	Water use	-	-
	Nitrogen emissions	NO_x and NH3 emissions	+	+
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	+	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+	+

Increasing minimum standards requires an expansion of, and more high-quality, technology for separation and recycling processes. Instead of incineration, a diversified process with separation, recycling, incineration and landfill now treats the waste. More transport movements are needed in this process. All these changes have an impact on **greenhouse gas emissions**. The reduction in CO_2 emissions due to less waste incineration is offset by more and more intensive processing processes and potentially more transport. On the one hand, less energy is generated through combustion, which may shift to more fossil primary fuels. On the other hand, it generates a profit on CO2 from recycling, which results in savings on primary consumption of raw materials. These effects are difficult to quantify at this level, but it can be assumed that on balance this alternative will have a positive impact on the target of reducing ***greenhouse gas emissions*** (+).

Energy use and **fossil fuel use** is increasing slightly due to the intensification of processing and transport. This has a (limited) negative impact on these criteria (-). It does not include the fact (and positive effect) that producing primary raw materials (the mineral extraction chain, transport, production of the usable raw materials) can require a lot of energy and thus cause a lot of CO_2 emissions. The use of secondary materials can greatly reduce this. However, the magnitude of these effects varies greatly between raw materials and therefore between waste streams.

The increased commitment to cleaning, segregation and recycling and the increase in transport flows mean that **energy use** and **water use** are increasing. This has been assessed negatively (-). Also, energy and water savings from the reduction of primary raw material extraction, transport and processing have not been taken into account in this assessment to avoid double counting with the efficient use of raw materials previously discussed, where this has been taken into account. An example of this is the waste stream stone wool, which consists of 96 to 98% of natural inorganic material. However, stone wool is mainly dumped due to technical and financial obstacles. Stone wool production is an energy-intensive process and recycling saves part of this energy use

In principle, the effects on greenhouse gases are also **nitrogen *emissions.*** Reduced waste incineration reduces nitrogen emissions. On the other hand, more and more intensive processing techniques and transport lead to an increase in nitrogen emissions. However, this impact is not balanced with the reduced emissions due to combustion. On balance, this alternative scores positive (+) in comparison to the baseline situation.

This alternative reduces incineration and landfilling. Less combustion reduces air pollution and, therefore, **dispersal of harmful substances**. The risk of harmful substances spreading is also reduced if the bulk of waste goes down. This is a positive impact (+) compared to the baseline situation. An additional effect of increasing the minimum standard may be that impurities that may be present in waste streams can be removed from the cycle during the treatment processes. This can help to reduce the risks of dispersion of environmental pollutants. As a result, the contribution to reducing the exceedance of standards will also be reduced in terms of soil, water and air quality. This therefore also has a positive impact (+).

4.3.3 Realisability

The differences between alternatives IV.b1 and IV.b2 are due to the different deployment of steering mechanisms. This also leads to differences in the assessment. Table 4.4 summarises the assessments of the two alternatives. The impacts and the assessment are described for each alternative after the table.

In the feasibility of both alternatives, an important consideration is given. Increasing the minimum standard will in many cases require investment in new processing technology and/or capacity expansion. The techniques are often available, but the investments needed can drive up prices and thus reduce economic profitability. The competitiveness of secondary raw materials is therefore a focus. The impact on capacity development (investment) has been assessed in a separate assessment aspect.

Table 4.4: Assessment of feasibility of alternatives IV.b1 and IV.b2

Realisability	Practicability and enforceability (government)	Legal enforceability	0	--
		Practical enforceability	-	0
		Financial enforceability	0	0
		Indirect and/or long term costs	0	+
	Feasibility and compliance (market)	Practicability practical	0	+
		Compliance with practical	0	0
		Economic feasibility	+	+

Alternative IV.b1

Proper use of the full load declaration system is a focus. The current practice of full load declarations for the dumping ban (BSSA) shows that the system may not be completely watertight. Flows are likely to be landfilled and, in principle, would need to be incinerated[165]. It may therefore occur that waste is treated at a lower quality

165 Circular Economy & VTH study. How can we steer towards circular business practices? To explore opportunities and barriers in the VTH toolkit in environmental services. (2021). NL Environment Section.

than it should be. There are several reasons for this. For example, the competent authority may find it difficult to assess whether something is technically non-combustible. They sometimes suspect that something could be incinerated, but if the applicant was able to show two declarations from WIPs before the dumping ban, this would be difficult to substantiate. The competent authority needs guidance to be able to assess whether alternatives are available for a specific stream except landfill and guidance to assess whether two statements from WIPs are sufficient to grant an exemption or may ask for more. A guideline in the CMP, which provides guidance on dumping bans, is currently under preparation and is offered by the competent authority. The same effect could also occur when establishing a full load declaration at WIPs, and this experience shows that the system of full load declarations to be set up has challenges in making this alternative work. This has an impact on realisability.

A second focus is on the incineration ban. Certain streams are already subject to a dumping ban in this alternative due to technical and/or health reasons. How to check carefully

this dumping ban is linked to the incineration ban in conjunction with the full load declarations system. If all processors (WIPs) submit a declaration of full load, this stream cannot be incinerated or landfilled (because of the dumping ban). If a stream cannot be recycled or incinerated, full load declarations from both recycler and burner must be obtained. In addition, for these cases, it should be considered whether they can be given priority in the recycling process in relation to streams with other, yet combustible materials, which, at full load, still have a potential for recovery by incineration.

Government

For the **public administration**, this alternative is feasible and enforceable. This alternative requires an adaptation of minimum standards and possibly an incineration prohibition with a waiver. The latter should be regulated by law. It is, however, necessary that the minimum standard adjustments and the introduction of an incineration ban for a stream are based on a thorough study that assesses the likelihood of the new techniques being realised (investments by the sector). There are no major challenges in terms of legal enforceability. The permits will have to be updated. Therefore, the ***practicability legally*** has been assessed in a neutral manner (0). There is now experience with the full load declaration system. However, regulation and interpretation are becoming more complex. If a full load declaration system is established for both incineration bans and dumping bans, the complexity increases.

Enforceability is a point of attention because, as indicated above, the current practice of full load declarations in the dumping ban demonstrates that obtaining and using these declarations is relatively straightforward and ultimately does not result in the intended processing. This system of full load statements is currently being reviewed and improvements are being made. These learning points can be taken into account when setting up such a recycling system. The assessment of the '***enforceability practical***' criterion has been assessed as negative (-) in comparison with the baseline situation, in the light of the experience gained so far. It is also relevant here that, given the open borders, if the minimum standard is going to recycling, then exports for incineration should be counteracted. However, the latter is well possible with the grounds for objection laid down in the EU Regulation and we are already doing so for several waste streams.

In current practice, the government has already organised the enforcement of the minimum standards. Raising will certainly require extra care and commitment to enforcement in the short term, but in the long term, engagement and thus costs are not expected to change substantially. For the criteria '***financial enforceability'*** and '***indirect and/or long (more) term costs'*** the assessment is neutral (0).

Market

For the **market**, several aspects play a role in the assessment of feasibility and compliance. The starting point is that minimum standards will only be updated if it appears that the introduction of new/higher-quality processing is technically feasible. The new techniques will always be available. This alternative incentivises processors to invest in these new techniques and in capacity. This will be feasible for many parties, but also pose challenges for some. This is because the provider can only hear from its own processor that it is full. In the case of a full load declaration from the recycler, a waste provider will have to make the waste stream available to at least one other recycler. Therefore, if the full load declaration for combustion follows the same system as full load declarations for landfilling, this will involve at least two processors. The waste provider can then follow the waste through an incineration plant. The provider indicates that it has passed through two recyclers and the burner checks this. Therefore, WIPs need to understand current and central full load declarations of recyclers in order to prove that there is no other alternative. It will therefore require more effort from different parties. The alternative requires more effort in some areas, but it involves processes that are also already in place in current practice. The overall assessment is neutral with regard to the '***practicality of implementation***' criterion (0).

As indicated in the section above, it may cost the various parties more in this phase of the chain. However, as regards ***practical compliance***, this alternative does not lead to any substantial changes. The assessment on this aspect is therefore neutral (0).

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This alternative has advantages for the market. More recycling is taking place and more facilities are needed. This, however, requires investment in capacity. The benefits are not directly visible, but are available in the longer term. More waste stream operations are expected to increase opportunities for the market to generate benefits. The alternative also has a positive impact on the markets for secondary material by providing more certainty about the supply (in volume and quality) of secondary materials. The assessment of ***economic feasibility*** is therefore positive (+) compared to the baseline situation.

Alternative IV.b2

Government

For the **public administration**, this alternative is feasible and enforceable. This alternative requires an adaptation of minimum standards, as laid down in the sector plans. It is necessary that these be based on robust research that has assessed the feasibility of the new techniques. Given the scale of the flows, as shown in section 3.2, this process is substantial.

However, the way in which taxes are levied can be a focus. The introduction of a differentiated rate system in the event of a merger is an addition to, and increases the complexity of, the current practice. It is not recommended to differentiate rates according to waste stream, as it led to circumvention (in case of earlier use). One example is that waste was considered 'hazardous' because the rate was lower. This also ignores the purpose. Introducing a grant system to compensate for more expensive processing is even more complex as it is indirectly driven. In addition, the implementation of the rules may require the cooperation of several ministries. Furthermore, the suggestion made by experts that the rate be easily adjustable to maintain an actual incentive effect was made. An expert states that the prices should be higher if technology develops, for example. This increases the complexity of the current regime. Another expert says that it is precisely temporality, as the aim is to phase out the old minimum standard. In addition, the licences need to be updated. For these reasons, the impact on ***legal practicability*** of this alternative is very negative (--) compared to the reference situation. In contrast to the greater complexity of implementing this alternative, implementation requires less effort in practice than working with full load declarations, as already included in Alternative IV.b1.

In current practice, the government has organised the maintenance of the minimum standards. Raising will certainly require extra care and commitment to enforcement in the short term, but in the long term, engagement and thus costs are not expected to change substantially. What public authorities need to be vigilant is the potential for cross-border activity. An example of cross-border activity is that waste providers may be able to move abroad with their waste as it is easier to access. Experts also say that the public authorities need to pay close attention to the effect pricing in the European context. Overall, the impact on ***practical and financial enforceability*** for the administration is assessed as neutral (0 and 0).
The '***indirect and/or long (or more) term costs'*** criteria are assessed positively (+), as absolutely societal benefits are visible through less incineration and more recycling.

Market

For the **market**, several aspects play a role in the assessment of feasibility and enforceability. The starting point is that minimum standards will only be updated if it appears that the introduction of new/higher-quality processing is feasible. The new techniques will always be available. However, processors must invest in these new techniques and in capacity. This will be feasible for many parties, but also pose challenges for some. Overall, the assessment on the criterion '***practicality of implementation'*** is positive (+).

Enforceability does not lead to a significantly different situation for the market compared to the current one. Minimum standards also apply in the current situation. The complexity of this alternative is lower compared to Alternative IV.b1 – a system of prices is straightforward and does not require any further processing by waste processors. The assessment for ***practical compliance*** has therefore been assessed in a neutral manner (0).

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This alternative has advantages for the market. Recycling rates are increasing and market opportunities to generate sales and returns are increasing. This, however, requires investment in capacity. The benefits are not directly visible, but are available in the longer term. The alternative therefore has a positive impact on the markets for secondary material sales. The assessment of ***economic feasibility*** is therefore positive (+) compared to the baseline situation. In this respect, there is no difference to alternative IV.b1.

5. Full Consideration

5.1 Consideration of alternatives

As described above, in principle, the alternatives are not different in terms of target achievement and environmental effects. For both alternatives, the assessment for the target range is positive, but greater use of waste stream treatment techniques will require more energy and emit more greenhouse gases. The second-order impacts have not been taken into account in this assessment. These (positive) effects are related to the reduction in the use of primary raw materials and thus also to the reduction in the effects of mineral extraction, transport and processing.

The distinction between the alternatives is achievable. Both alternatives are based on the assumption that implementation of the measures is legally and practically feasible, and that this will enable the market to emerge. However, both alternatives face their challenges.

The challenge for alternative IV.b1 is to create a functioning system of full load declarations. At present, the system may not be completely watertight, and flows that in principle would have to be incinerated would still end up at landfill. It may therefore occur that waste is treated at a lower quality than it should be. A second focus is on the incineration ban. Certain streams, e.g. residues from the recycling process, are already subject to an incineration ban in this alternative due to technical and/or health reasons. If all processors submit a full load statement, this power cannot be combusted. For these cases, it should be considered whether they can be given priority in the recycling process compared to other combustible materials in relation to those streams which, at full load, still have a potential for recovery by incineration.

In alternative IV.b2, pricing is challenging. The introduction of a differentiated rate system in the event of a merger is an addition to, and increases the complexity of, the current practice. Introducing a grant system to compensate for more expensive processing is even more complex as it is indirectly driven. In addition, the implementation of the rules may require the cooperation of several ministries.

5.2 Impact on the underlying goal

The impact of the alternatives on the underlying goal has been assessed in the **capacity development** aspect. Based on the assessment of the feasibility of the alternatives and the possible ‘walk holes’ available, the assessment is that Alternative IV.b2 offers more confidence in the market than Alternative IV.b1. A pricing system is relatively simple and straightforward in practice. On the other hand, the implementation of this alternative may be more complex than Alternative IV.b1. Furthermore, the promotion and mandatory use of the manufacturing industry/companies for the implementation of mandatory recyclates is an important consideration.

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Circular Materials EIA plan

Part Report 5: Minimum standard General; differentiate between forms of recycling

Antea Group

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21 June 2024

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Circular Materials Plan EIA

Part Report 5: Minimum standard general; distinguishing between forms of recycling

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1. Introduction

1.1 Circular Materials Plan

The current National Waste Management Plan (LAP3) expires at the end of 2023 and will therefore be revised. This revision is accompanied by a shift in emphasis. The LAP focused on good waste management, while the (first) Circular Materials Plan (CMP) increases the ambition to retain raw materials for as long and as long as possible and to reduce the use of primary raw materials as much as possible. The CMP is therefore more in line with the transition towards a circular economy than the LAP3.

The environmental impact assessment procedure and the environmental impact assessment (EIA) as a product [166] provide an objective picture of the environmental impacts of a number of policy choices. The EIA is a separate product from the CMP. The EIA provides information enabling policy choices to be made under the CMP.

Six policy options examined their environmental impacts and included them in six separate sub-reports. The overall environmental impact report (EIA) has been prepared on the basis of these sub-reports.

The study of the functioning of the alternatives and their possible impact involved, for example, drawing on the knowledge and experience of a number of experts in the form of an expert team consulted several times. Where specific information from (members of) the expert team has been used, this is explicitly mentioned. The use of the expert team's input has been further detailed if necessary.

The content of this report is the responsibility of the authors.

This sub-report for the purpose of this section refers to the subject 'Minimum standard general'; distinguishing between forms of recycling.

1.2 Minimum standard general; distinguishing between forms of recycling

Waste can often be recycled in a variety of ways. Not all of these approaches need to be matched in terms of environmental performance, the quality of the recyclate, or from an economic point of view. For a long time, different forms of recycling have been addressed, especially how they relate to each other. This is also a topic of regular political attention. In 2012, for example, the Van der Werk motion (TK 30 872, no. 116) asked the Government to make a distinction between high-quality and low-quality recycling in its waste policy targets. A methodology based on an mLCA has now been developed to address the issue of slightly higher or lower quality.

The multicycle LCA methodology is the one applicable to assess whether something is of high quality or not. In principle, three recycling cycles will be applied. The LAP has also for some time included the possibility of classifying a specific form of recycling of a waste stream as a recycling standard. The term 'recycling standard' replaces the term 'preferred recycling' used in LAP3. Setting a recycling standard allows the tool to be used to effectively steer the minimum standard towards a certain high-quality form of recycling. However, this option is not currently covered by any of the LAP3 sectoral plans.

Six cases are examined in this sub-examination. These cases have been selected from a long list of potential flows. The selection process enables a good understanding of the effects of prescribing one specific item through the consideration of these flows in the context of this EIA
(high-quality) form of recycling, in the situation where recycling is the minimum standard and there are several options

are for recycling. In addition to feasibility considerations, the following general criteria were considered:

166 The standard abbreviations are m.e.r. for environmental impact assessment (procedure) and EIA for the environmental impact report.

- Multiple forms of recycling should be available for the waste stream in question. Similarly, those different recycling techniques should lead to significant differences in their contribution to a circular economy.
- It should be a waste stream of significant scale and associated environmental impacts. This is to look at flows where environmental gains can be made.
- Diversity has been chosen to provide a good understanding of possible impacts. There is no uniform treatment method for the different waste streams. Each flow has its own minimum standard and has its own possibilities for increasing the standard. By opting for diversity, the EIA provides the widest possible insight into impacts. It is not appropriate to consider waste streams whose forms of recycling and the choices to be made in them resemble each other.

On the basis of these criteria, the following cases examined whether the imposition of a specific form of processing contributes to the promotion of recycling.

- Bituminous roofing waste
- Concrete
- Plastic packaging
- Cotton
- Nappies and incontinence materials
- Wood

1.3 Synopsis

Chapter 2 discusses the assessment framework and, in particular, how it deviates from the approach taken in the other partial reports. Chapter 3 highlights the baseline situation. The cases are detailed in Chapters 4 to 10. Finally, Chapter 11 is a contemplative chapter, which indicates which case-related information is relevant to the assessment table and which provides information for the assessment of this alternative.

2. Assessment framework

2.1 Introduction and overview

The assessment framework is included in the NRD for this EIA. Following the input and advice received on the ETD, some adjustments have been made to the assessment framework and have been incorporated in the final ETD[167].

In the context of preparing this EIA, the assessment framework was further elaborated and, following the first finger exercises with the impact assessment and comments made in expert meetings, some further adjustments were made.

The main changes made to the assessment framework in the NRD are:

1. A level of aggregation has been added and the aspects and sub-targets are below that level. This leads to a two-topic format focusing on objectives and target ranges, respectively on circularity target and landfill and incineration target range, on environmental impacts and on feasibility.
2. In the target achievement topics, the second level of aggregation consists of sub-targets and in the topics of environmental impact and feasibility the second level of aggregation consists of aspects;

167 Reaction Note on Views – NRD for Environmental Impact Assessment for the Circular Materials Plan; Ministry of Infrastructure and Water Management, January 2023

3. Some aspects are formulated in a slightly different way than in the NRD, e.g. in the case of raw materials, all raw materials (and not only renewable ones) are considered, but the ratio of renewable and non-renewable attention is paid to;
4. The feasibility theme has been divided into feasibility (involving the government) and feasibility (how market players can deal with the measures included in the alternatives); this difference between the government and the market is important in making the assessments of how the alternatives will work in practice. This is because businesses operating in the market play an entirely different role to that of public authorities. This is because operators make daily choices about the way materials are processed (cleaning or immobilisation), but also make choices about investments in treatment and processing capacity.
5. Some aspects have been added, namely energy use, water use and consumer market.

This leads to the assessment framework as shown in Table 2.1 and Table 2.2. This classification, comprising four topics and a total of 11 sub-objectives and aspects, was also used in the summary assessments of the alternatives. A higher number of indicators have been identified under the sub-targets and aspects. These are explained in section 2.2.

Table 2.1: Target Scope Assessment Framework

	Efficient use of resources
	Stimulating high-quality waste processing
	Impact on the quality of secondary materials, including in a possible next cycle of recycling
	Contribution to reducing landfilling and incineration

Table 2.2: Impact assessment framework

Environmental impact	Greenhouse gas emissions
	Energy use
	Water use
	Nitrogen emissions
	Risks to man and the environment from spreading harmful substances
Realisability	Practicability and enforceability (government)
	Feasibility and compliance (market)

The NRD indicates that when assessing the alternatives (per component), specific effects or concerns are manifest that are relevant for the assessment, but are not included in the assessment framework. Where relevant, the assessment framework may be supplemented by specific indicators.

Rating scale

A five-point scale (Table 2.3) is used to assess target achievement and impact. The assessment is always relative to the baseline situation, also referred to in this report as the base case.

In principle, the assessment is qualitative. Where possible, it is supported by (semi)quantitative evidence.

Table 2.3: Rating scale

	betekenis
++	zeker en substantieel positief effect
+	vermoedelijk en/of beperkt positief effect
0	neutraal effect
-	vermoedelijk en/of beperkt negatief effect
--	zeker en substantieel negatief effect

2.2 Method of assessing the subject Minimum standard general; distinguishing between forms of recycling

In this alternative, six flows are considered. Because these flows and their related processing techniques are very diverse, and the assessment method is different from that used in the other partial reports. The analysis of these cases should, as far as possible, generate areas of concern that form the basis for an overall assessment of this alternative.

As far as possible, the assessment of the criteria will be carried out on the basis of the information provided in the cases. However, for many elements, this information will not be generic enough to allow for an assessment. This applies in particular to the effects on the environment. The effects of the different cases are too specific to that end. For the feasibility component, the cases will be used to generate issues that can be taken into account in the assessment.

This alternative will be addressed in Chapter 11 and the case information will be used to identify the information it provides for the different parts of the assessment framework.

3. Reference situation

3.1 Policy and Regulations

Waste can often be recycled in a variety of ways. Not all of these should score equally in terms of environmental gain, quality or economic value. The LAP makes it possible to consider a specific form of recycling of a waste stream as the recycling standard. This allows the instrument to move to a particular form of recycling by setting the minimum standard. However, this possibility has not yet been implemented in any of the LAP3 sector plans at this stage. This enables processors to decide which form of recycling to use, as long as the minimum standard is met.

If the minimum standard has been explicitly designated as a 'recycling standard', other forms of recycling may not automatically be approved, even if the application is accompanied by an LCA comparing different forms of recycling (see also Section D.2.2.4.1 of LAP3).

3.2 Autonomous developments

Under the current system, it is up to the processors to choose the process of recycling waste. This leaves the market free to choose the most economically advantageous option. However, the most economically advantageous choice does not correspond by default to the best choice with regard to promoting the circular economy. This could mean that the market makes choices that are not sustainable or that are not in line with the authorities' vision of being circular by 2050, without additional regulation.

A number of initiatives are ongoing to enable higher quality processing. These are market-based and government-based initiatives (policy). Market initiatives are very diverse. These are steps in processing techniques but also steps in the production of articles, including secondary material products.

Chapters 4 to 10 specifically address autonomous developments for the relevant flows in each case.

4. Alternative

4.1 Overview of alternatives

The description of the autonomous situation indicated that it is unclear whether the market makes the best choices on achieving circular objectives without calling a recycling standard[168]. This sub-report examines whether this can help to claim a recycling standard.

The alternatives are as follows:

V.a. Continuation of the existing policy (= zero alternative)
In this alternative, no active targeting is carried out on any specific form of recycling.

V.b. To be sent to a specific form of recycling via the minimum standard.
This alternative actually implements the already existing possibility of identifying specific forms of recycling as preferred recycling.

4.2 Description of the Alternative V.b

168 The NRD rephrasing the structure and background of this alternative. It focused on the streams for which implementing the principle of high-quality recycling could be technically considered in practice. There were also 5 streams compared under the alternative in the NRD. Contrary to what is stated in the NRD, this report examines whether the tool 'prescribing a recycling standard' leads to an incentive for recycling. This is done in 6 cases (instead of 5, as indicated in the NRD).

This alternative effectively implements the already existing possibility of designating specific forms of recycling as a recycling standard. For this purpose, material streams have been selected that allow multiple forms of recycling. These cases assessed whether recycling standards can contribute as a tool to the promotion of the circular economy and how feasible this can be for the market.

As indicated in previous chapters, specific cases are involved. This selection does not allow for a generic impact assessment in the context of the EIA. Nevertheless, insights from the cases will be presented for the different parts of the assessment framework.

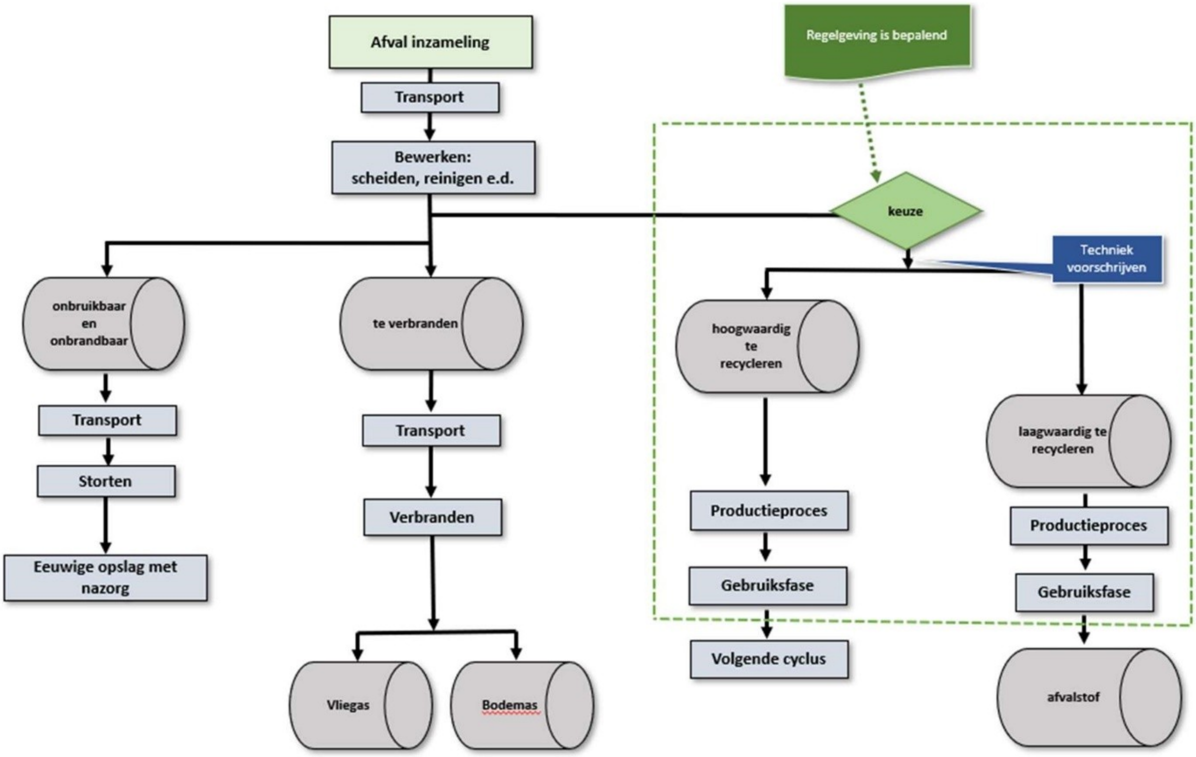

Figure 44.1: Process schedule Alternative V.b

In this alternative, the above control chart is relevant (Figure 4.1). This diagram outlines the options for materials to be recycled after processing. This alternative suggests that a standard of recycling is imposed through regulatory measures for techniques where technical feasibility of a certain high-quality form of recycling is sufficient.
The dotted line shows the scope of this alternative as indicative, i.e. the sub-process where measures in this alternative have a primary impact. The impact assessment describes relevant impacts across the system.

It is important to steer towards a recycling standard where sufficient sales are available. If the market itself controls the processing methods, secondary materials will be produced which have an economically viable market. However, if processors are required to implement a certain recycling process, this also leads to a limit in secondary products produced. These products need a sufficiently large sales market to ensure that recycling remains an economically viable activity.

6 cases have been developed in the following chapters. It describes the processes according to the following focus areas:
- Policy and Regulations;
- What is the current processing process;
- Autonomous developments and potential future processing;
- Considerations in choosing a recycling standard, paying attention (where relevant) to: - Circularity target, - Environmental effects, and - Realisability.

5. Bituminous roofing waste

5.1 Policy and Regulations

Bituminous roofing waste falls under sector plan 33 in the current LAP3. Sector plan 33 covers non-asbestos roofing waste, meaning that it is bituminous roofing waste, tar-containing roof waste and composites. The minimum standards in this sector plan are broken down into PAH-rich roofing waste, PAH-poor roofing waste and composite roofing waste. In general, PAH-rich roofing waste is the roofing waste containing tar and, for

PAH-poor roofing waste, it is bituminous roofing waste. The composite roofing waste may consist of a mixture of roof waste containing tar and non-roofing material, or of bituminous roofing waste and non-roofing material, or a mixture of roof waste containing tar and non-roofing material and non-roofing material[169].

The minimum standard for low-PAH roofing waste is 'recycling at least of the mineral fraction, for example by use in a cement kiln, TAG cleaner, etc.'[5]. This means that bitumen itself does not need to be recycled.

The composite roofing waste should first be further sorted up to a maximum of 10% non-roofing material in the stream and then processed according to the correct minimum standards[170].

5.2 Current Processing

Pre-trial process

Policy measures should ensure separate collection of different types of roofing. This facilitates the processing process for the 'non-composite' flows[171]. However, roofing waste is generally not a very pure stream. For this reason, not all bituminous roofing waste is suitable for recycling into asphalt or new roofing sheets.

Processing

Bituminous roofing waste consists of: - 51.7% bitumen;
- 14.0% polypropylene (APP);
- 21.2% filler (sand-lime brick);
- % sand, - 4.1 % fibre[172].

Currently, the mineral fraction (filler and sand) is mainly recycled in the Netherlands. The bitumen is mainly used as an energy input in other processes. Some of the bituminous roofing waste ends up in TAG[9] cleaners where it serves as a fuel for defusing tar in the tar-containing asphalt. Electricity and heat are also generated. The mineral fraction is also processed into ECO granules and ECO fillers[173]. These are then often used by the concrete industry.

Some 20% of the bituminous roofing waste is recycled, most of which end up in asphalt[174]. The remaining part of the bituminous roofing waste enters WIPs via the mixed construction and demolition waste. Here, energy is recovered during combustion.

The vast majority of bituminous roofing waste that has been prepared in the Netherlands goes abroad. There it is processed in two ways. Asphalt reaches a small proportion and cement kilns release the remaining part. In cement kilns, recycling is the same as in TAG cleaners; the bitumen are recovered as fuel and the inert part of the roof sheets enters the cement clinker (recycling).

169 LAP3 – Sector plan 33 [5] Idem.
170 Idem.
171 LAP3 – B.3.3.3 and B.3.6
172 CE Delft, 2016; High-quality recycling – enclosed in a policy formulation and a multi-cycle LCA methodology [9] Tar-containing asphalt granulate
173 https://www.rekobv.eu/en/het-tag-reinigingsproces/
174 CE Delft, 2016; High-quality recycling – Enclosed in a policy formulation and a multi-cycle LCA methodology

5.3 Autonomous developments and potential future processing

Sectoral plan 33 indicates that the aim is to allow recycling forms of roofing bitumen only, with recycling of such bitumen. Roof bitumen recycling can be done in two ways:

- by recycling roofing bitumen into asphalt;
- by re-using the bitumen as a raw material for new roofing pathways.

The recycling of roof bitumen into asphalt is the following process. The bituminous roofing waste is first assessed on the basis of its suitability for use in asphalt. It is then sent to the processor where the product is directly shredder and bitumen granulate is produced[175]. This granulate is used in its entirety in the asphalt production where the modified bitumen, sand and lime sand spit out. At the time of publication of LAP3, requiring the recycling of roofing bitumen into asphalt was not realistic due to the uncertainties surrounding the marketing. This is due to uncertainty about the quality of asphalt when using roofing bitumen[13]. In 2022, the first 100% circular asphalt mixture achieved a CROW Asphalt Quality Demolition Certificate[176] for Base and Intermediate Surface Course[15]. This means that the quality of this asphalt is at least as high or higher than that of standard asphalt. Circular asphalt is also seen as a viable alternative[16], at cost.

The re-use of roofing bitumen as a raw material for new roofing pathways is an available recycling technique. However, Roof waste can only be recycled for very clean materials, which is estimated to be no more than 15% to 20% of the roofing waste. The rest of the roofing waste would then still need to be treated via the TAG cleaners. As the company is increasingly exerting pressure to make environmentally conscious choices, the market will also feel this pressure more and more. This leads to the expectation that roof bitumen will be recycled more even without the introduction of a recycling standard. An initiative on cutting residues on bitumen roofing pathways, arising from the repair and covering of roofs (‘cutting residues from bituminous roofing material’), is also currently underway and offered to processors for the production of new roofing pathways.

5.4 Considerations in choosing a recycling standard

The minimum standard for bituminous roofing waste is currently recycling the mineral fraction. This means that there is still much to gain towards a circularity target range by also requiring the recycling of bitumen. However, this could also be achieved by raising the minimum standard in general

to recycle bitumen and not introduce a recycling standard. However, it should be noted that raising the minimum standard can only be done if processing bituminous roofing waste is profitable through full recycling.

In terms of environmental impact, bitumen recycling in asphalt scores better in an mLCA than recycling into roofing. This is due to the saved material. The asphalt scenario assumes that almost all roofing waste can be converted into granulate and that it can be used in asphalt production. When recycling roofing bitumen into new roof sheets, a higher failure of material is assumed[177]. However, the question is whether these assumptions are maintained, the current asphalt producers/processors of bituminous roofing waste have very strict requirements on the quality of the waste they want to use. The figures now reported by the producer are that around 15% of the bituminous roofing used is suitable for asphalt production[178]. However,

175 https://www.duravermeer.nl/infrastructuur/producten/asfalt/circularpa ve/ [13] Idem.

176 https://www.otar.nl/dura-vermeer-maakt-circulaire-bitumen-de-standaard/ ; 28 June 2022

[15] https://www.duravermeer.nl/infrastructuur/producten/asfalt/circularpave/ ; [16] Idem.

177 CE Delft, 2016; High-quality recycling – Enclosed in a policy formulation and a multi-cycle LCA methodology

178 Cattle series around Circularpave: sustainability and MKI; Dura Vermeer; 9 January 2023 [19] RWS telephone interview, 29-09-2023 [20] Idem.

it is unclear whether these figures are realistic or if there is more technical possibility[19]. This difference in understanding may be explained by the fact that the producer sets high quality requirements in order to increase confidence in secondary asphalt and thus improve the chances of outlets. However, if so much material fails, the benefits of the LCAs are lost and both scenarios are likely to be similar in terms of environmental impact.

In terms of realisability, steps are being taken in the asphalt and roofing industries to use more secondary material. In the meantime, as indicated above, asphalt is produced with bitumen from roofing. The development of the sales market there is still uncertainty, but the CROW Asphalt Quality Final Certificate is a step in the right direction. Recycled roofing bitumen used in new roofs appears to be slightly less widespread. While 'predator2roof' has been an initiative since 2014, on the basis of desk research secondary roof runways appear not widely available. The sector seems ready to move[20].

Based on available capacity, it seems more logical to prescribe recycling in asphalt as a recycling standard. However, there is no clear added value in dealing with one form of recycling versus another. In addition, requiring a recycling standard may risk halting innovation in the roofing industry in terms of bituminous roof circularity. On the other hand, steering an innovative form of recycling can support this industry by increasing the demand for this processing method.

6. Concrete rubble

6.1 Policy and Regulations

In the current LAP3, concrete falls under sector plan 29 'stony material'. This plan distinguishes between PAH-poor stony material and PAH-rich stony material. Immobilisates are also covered by this sectoral plan, but they are not relevant for the recycling standard because immobilisates are not concrete. The minimum standard for PAH-poor stony material is recycling. In the case of PAH-rich stony material, the material should first be thermally or extractive cleaned and then recyclable. Stony material should also be collected separately in the base[179]. However, this means that concrete does not need to be separated from other stony materials such as bricks.

6.2 Current Processing

Pre-trial process

Concrete is often collected as part of stony materials. As concrete is predominantly processed into mixed granulate, this mix does not disturb the recycling process. This means that demolition of buildings and structures

179 LAP3 – Sector plan 29

does not require careful handling of the stony fraction, which facilitates the process. However, if the concrete is processed into concrete granulate, it is important that the flow is collected separately.

Processing
In the reference situation, concrete rubble is processed in two ways: (1) the concrete debris is crushed in a mixing stream where mixing granules are produced or (2) the concrete debris is crushed in a pure stream.
The vast majority of concrete is processed in the first way. The rubble is broken by rubble crushers into concrete granulate. This is often not a pure stream, producing mixed granulate. Mixed granulate consists of at least 50% concrete, the rest being masonry rubble. The mixed granulate is used as a foundation material under roads, after which it can be applied in the same way several cycles[180].
However, a small but growing fraction of concrete rubble is broken into pure concrete granulate and is used as an aggregate in concrete production. In order to use concrete rubble as an additive, the rubble must be as pure as possible and contain no other stony material. Impurities can compromise the bonds and load-bearing capacity[23].

6.3 Autonomous developments and potential future processing

As indicated above, the proportion of concrete rubble used as aggregates is expected to grow. This is driven by the demand for concrete with a lower environmental cost indicator (MKI) value. This market still has enormous potential for growth. Demand for aggregates is expected to grow to 27.8 Mton in 2030, of which between 3.1 and 7.8 Mton is replaceable by concrete granulate as the coarse fraction. It is currently estimated that only 0.8 Mton of concrete granulate will be used for this purpose[181]. Furthermore, the fine fraction of aggregates could also be partially replaced by secondary concrete.

A third recycling technique is also under development. It may be possible that the percentages of secondary aggregates in the form of concrete aggregates may be even higher in the future due to the development of better crack-breaking techniques. With this new technique, the cement stone of the aggregates is rubbed. This higher quality concrete debris allows for a better accumulation and therefore a higher percentage of the aggregates could be replaced by this concrete debris[182]. Furthermore, this cement powder could potentially be used as a filler or as a dilution of part of the cement, further increasing the proportion of secondary materials in concrete. However, the use of this technique is still very limited. Production lines capable of handling an estimated quantity of between 0.04 and 0.05 Mton per year are now being launched. This is very limited in a rubble market with a size of around 25 Mton[183].

Finally, reuse is also given more attention. The reuse of concrete elements such as floor elements, façade elements and viaducts of viaducts would represent a large sustainability step. In order to facilitate this re-use, the construction works and works of art must be designed to ensure that these elements can be properly removed and that decommissioning is carried out in a different way so that they can be reapplied. This is increasingly addressed in the design phases.

6.4 Considerations in choosing a recycling standard

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180 SGS Intron, 2023; Concrete chain analysis
for CMP [23] Idem.
181 Idem.
182 BEwerken, 11-07-2023; https://bewerken.online/innovaties/sluiten-betonkringloop-biedt-kansen-voorverdere-co2reductie
183 BRBS personal communication, 08-08-2023

In essence, three recycling techniques are available: (1) Regular rubble breaking and use as a road foundation, (2) Regular breaking (possibly also washing) and application as an aggregate in concrete and (3) innovative breaking, and subsequent application as an aggregate and as a filler in concrete. Each recycling technique results in a product that can be used for different purposes with specific properties. A specific application is also chosen when choosing a recycling standard. Other uses will then no longer be possible.

Where the concrete debris is applied in foundations as part of mixed granulate, this concrete cannot be used as an aggregate in fresh concrete. This would ensure that primary sand and gravel will continue to be used for this purpose. Another possible replacement for concrete rubble as an aggregate would be AVI granulate. This is currently still resisted due to possible contamination in the incinerator bottom ash. However, regulation of the cleaning of bottom ash could also play a role in improving this market. Finally, when using concrete granulate in foundations, it should be noted that the development of concrete innovation could be more independent and smart crushing could be stopped. If concrete is to be used only in foundations, the focus on smart crushing for the use of concrete rubble in the concrete industry is of little use[184]. Smart crushing would make the recycling standard much faster for innovation, but other caveats need to be taken into account.

If the legislation and regulations were to focus on concrete rubble in concrete, there would not be enough concrete rubble in the mixed granulate to ensure the required load-bearing capacity for road foundations. This is because concrete rubble is essential for the load-bearing capacity of mixed granulate. If concrete is no longer recycled using mixed granulate, this will have consequences for road construction. The lower load-bearing capacity could be resolved in two ways: (1) apply the other constituents of the mixed granulate and apply a three-centimetre thicker asphalt layer or (2) use other materials as foundation. Both options lead to a greater environmental impact. If other materials were to be used for road foundations

Examples include sand cement (a primary substance), cementitious immobilisates or washed incinerator granules. However, none of these three options is optimal. Sand cement is not ideal because it is a primary material with a high environmental impact and is therefore not in line with the ambition to be circular. The option cement-bound immobilisates is not ideal because they are difficult to recycle and washed AVI granules are not sufficient power[185].

For the circularity target, it can be concluded that the different processing techniques are not distinctive. All three recycling techniques lead to multi-cyclic recycling with little material failure.

Regarding the environmental impacts, recent mLCAs suggest that using mixed granulate as a foundation would result in the least negative environmental impacts. However, it should be noted that this assumes that the mixing granules are replaced in the foundations by sand cement and that the recess results in the low mLCA score[186]. Furthermore, the innovative crushing is better than the default crushing if it is concrete granulate as an aggregate.

On the basis of realisability, using mixed granulate is the easiest option, as it is now the norm. Innovative crushing would be the most difficult to achieve, as it is the latest technique. However, if smart breaking becomes the default, it is expected that the market can take up this way of processing technically quickly[187].

184 SGS Intron, 2023; Concrete chain analysis for CMP

185 Idem.

186 Idem.

187 BRBS personal communication, 08-08-2023

7. Plastic packaging

7.1 Policy and Regulations

Plastic packaging, like other packaging, is covered by sector plan 41 ‘Packaging general’ in LAP3. The minimum standard for this is recycling. Except if the stream is too polluted for recycling, the minimum standard is ‘other recovery’.

Plastic packaging is all covered by the same sector plan, but it is not a mono-stream. This also means that the packaging cannot be processed in the same way. The composition of collected plastic packaging (in PMD waste) is, on average, as follows:
- 37% foil (this stream usually contains PP, PE and multilayer films);
- 18% PET trays;
- 16% PP;
- 14% PET;
- 11% PE;
- 3% PS;
- 3% other[188]

In the meantime, it is expected that the quantity of PET will be lower. The above figures are from 2018, before the deposit system was extended to smaller bottles.

7.2 Current processing

Pre-trial process
Plastic packaging is part of industrial and household waste. This is often separated in the PMD stream. Some companies and municipalities choose to separate the PMD from residual waste by post-separation. As this is market-sensitive and confidential information, there is no clear picture of how post-separation works[189].

Processing
The processing of plastics is very, very flow-sensitive. Each plastic type has its own processing methods. These can be divided into two groups: mechanical recycling and chemical recycling. Chemical recycling can be subdivided into monomeric recycling and feedstock recycling. In monomer recycling, the plastics are returned to monomers or polymers that can be reused to make new plastics. Feedstock recycling leads to the production of NAPHTA or syngas[190]. The possibility of using different processing types depends on the plastic type and the current purity. A suction flow generally leads to a higher-quality secondary product. Figure 7.1 shows a schematic presentation of the various processing methods.

188 Learning Cen+er Plastic Packaging Waste, 2018; Composition of collected plastic/PMD packaging – The impact of collection systems.
189 Idem.
190 CE Delft, 2019; Chemical recycling in waste policy.

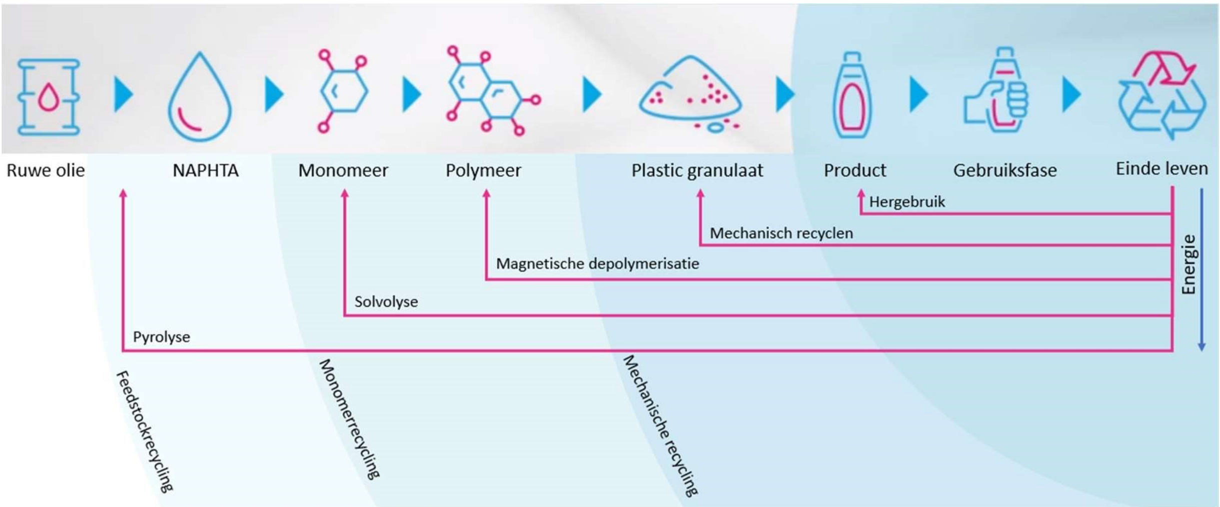

Figure 7.1. Schematic representation of the various plastic recycling forms.

The table below (Table 7.1) gives an overview of the plastic types that come back in packaging waste and how they can be processed.

Table 7.1: Plastic types and related processing techniques.

Plastic type	Mechanical recycling options	Chemical recycling options
Films (DKR 310)	90% of them are PE and PP. -PE can be recycled into non-food grade film, provided that the input is transparent and does not contain stickers or other substances that interfere with the skin; -PP is more difficult to recycle; -Multilayer foils and aluminium-containing foils cannot be mechanically converted into pure secondary products and are often down-cycled into thick-walled products[191].	Solvolyse (converted back to polymers) can be used for PE a PP, also with contaminations and for multilayer films[192]. However, it remains a focus to minimise contamination, thus improving the quality of this stream. In addition, the available processing capacity of engineering is still limited.
PET trays	PET trays are not mechanically recycled because of low mass yields, too wide variety in the stream (size, colour, composition, etc.) and too low quality of the finished product[193].	Magnetic depolymerisation (back to monomers) converts PET to BHET and can thus serve as near virgin material. This can be done for all forms of PET, including trays[194]. The available processing capacity of engineering is still limited.
PP	PP is often not sorted as a separated flow and enters the DKR 350 (mix) flow. The mechanical recycling involved in this process leads to thick-walled products[195].	Solvolyse (converted back to polymers) can be used for PE a PP, also with contaminations and for multilayer films. The available processing capacity of engineering is still limited.
PET	-PET bottles are collected as a relatively pure flow through the deposit system, which can be recycled into new PET bottles.	Magnetic depolymerisation (back to monomers) converts PET to BHET and can thus serve as near virgin material. The available processing capacity of engineering is still limited.

191 Innovation Partners, 2023; Action Plan: Design for recycling.
192 Obbotec, n.d.; OBBOTEC – SPINEX animation: our vision on plastic recycling
193 E.U. Thoden van Velzen, I.W. Smishing, & K. Molenveld, 2020; Exploring maximum achievable recycled PET qualities from scales.
194 CE Delft, 2019; Chemical recycling in waste policy.
195 Innovation Partners, 2023; Action Plan: Design for recycling.

PE	-PE can be recycled into non-food grade film, provided that the input is transparent and does not contain stickers or other substances that interfere with the skin; -Multilayer foils and aluminium-containing foils cannot be mechanically converted into pure secondary products and are often down-cycled into thick-walled products.	Solvolyse (converted back to polymers) can be used for PE a PP, also with contaminations and for multilayer films. The available processing capacity of engineering is still limited.
Mix plastics (DKR 350)	DKR 350 consists of approximately 45 to 50% films[196]. This relatively impure flow is only suitable for making thick-walled products.	DKR 350 is only suitable for pyrolysis (back to NAPHTA) or gasification (production of syngas)[40].

7.3 Autonomous developments and potential future processing

Developments in the sorting of the DKR 350 power

According to the Implementation and Monitoring Protocol (UMP) for packaging, DKR 350 may be up to 55% of the grading output. According to research, sorting operators are much better than this standard and achieve maximum percentages of 25-30%. However, it is expected that these rates will increase as the efficiency of sorting is no longer economically advantageous in the current market. Previously, the sorters themselves were responsible for the marketing of the sorted flows. The Waste Fund is now doing this. Sorters receive a fixed fee for each sorted tonne. Sorters will receive a fine if they do not meet the set standards. However, if their performance exceeds the standards, they will not receive a bonus. This removes the incentive for good quality and better sorting than the standard. Thus, DKR 350's sorting rates are expected to increase to reach the 55% standard[197].

Furthermore, processors indicate that they can obtain the DKR 350 stream in principle even less than the 25 to 30% it is today. However, this would mean that more PE and PP would be removed from the stream, whereas these plastic types are, on the contrary, making the DKR 350 stream valuable. Without PE and PP, the stream could no longer be mechanically recycled into thick-walled products.

Developments in chemical recycling techniques

Solvolysis and magnetic depolymerisation are now both tested on a small industrial scale. The developers of the solvolysis technique hope to sell small-scale units (with a capacity of around 10 ktonnes per year) to processors or recyclers[198]. The developers of magnetic depolymerisation have a similar strategy and have been testing the first 10 ktonnes of installation since 2019[199].

Pyrolysis is also a technology that is evolving. For example, the third generation of pyrolysis is now available. Integrated hydropyrolysis has a lower CO_2 emission than traditional pyrolysis and can tolerate a more waste stream as feedstock[200]. The optimum results are obtained with 50% plastic and 50% biomass inputs[201]. Furthermore, the chemical recycling industry as a whole is expected to grow significantly in the coming years

196 Royal Haskoning DHV, 2022; Findings pilot mix plastics (DKR 350). [40] CE Delft, 2019; Chemical recycling in waste policy.
197 Royal Haskoning DHV, 2022; Findings pilot mix plastics (DKR 350).
198 https://obbotec.com/spex-technologie/
199 https://ioniqa.com/applications/
200 CE Delft, 2019; Chemical recycling in waste policy.
201 https://obbotec.com/hydrocat-technologie/

worldwide[202]. This is due, among other things, to technological developments, possible changes in oil prices, EU regulation and recycling targets, and a growing focus on plastic recycling worldwide[203].

7.4 Considerations in choosing a recycling standard

Mechanical recycling and monomer recycling contribute the highest percentage of recycled materials if only circularity is considered[204]. However, in the case of the input to the processes, monomer recycling and feedstock recycling may process a larger quantity of input because the input to the processes may be less pure than in the case of mechanical recycling. It should be noted that the input from the processing has an impact on the quality of the output and its potential for use in all forms of recycling. Looking at output alone, mechanical recycling and monomer recycling would be the best option.

However, under current regulations, chemical recycling is not preferred. Mechanical recycling is preferred over all forms of chemical recycling as it reduces energy costs, reduces emissions and often leads to valuable secondary materials. However, considering monomer recycling and feedstock recycling specifically instead of chemical recycling as a whole makes it clear that there is a large difference between them in terms of greenhouse gas emissions produced. Monomer recycling does not produce much more greenhouse gas emissions than mechanical recycling, while feedstock recycling does[49]. On the basis of environmental effects, mechanical recycling should be preferred, monomer recycling thereafter and last feedstock recycling.

However, prescribing a plastic recycling standard is difficult for practical reasons. Plastic is a very diverse stream and recycling techniques often focus specifically on certain plastic types. Thus, the elaboration of the recycling standard should be very specific. The risk of a specified recycling standard is that there is little incentive for innovation. Requiring a certain form of recycling does not encourage innovation in other forms of recycling. In the case of plastic recycling, a constant search for better techniques is ongoing. These new techniques should not be used. On the other hand, steering an innovative form of recycling can support this industry by increasing the demand for this processing method.

In addition, the main benefits of higher-quality secondary plastics are to be achieved in pre-processing. Sorting better results in further monostreams in the south, leading to improved quality of secondary products. Imposing a specific recycling standard that requires a certain quality of feedstock is unrealistic if the separation processes do not improve. The current LAP3 states that the minimum standard for plastic packaging is recycling, unless the flow is too dirty, the minimum standard is ‘other recovery’. This is logical because the recycling processes depend very much on the quality of the waste stream. However, if a recycling standard were to be prescribed, it bans all other recycling processes that could process the lower quality of plastic waste. This is not efficient. All types of plastic recycling can be complementary in order to keep as much plastic in the barrel as possible.

Setting a recycling standard is therefore possible, but it requires a proper balance between the techniques available for the different plastic types, and a broader vision than a focus on the processing technique alone. The preliminary sorting process should also be considered. This also contributes to the introduction of extended producer responsibility (EPR).

202 CE Delft, 2019; Chemical recycling in waste policy.
203 McKinsey, 2018; How plastic waste recycling could transform the chemical industry.
https://www.mckinsey.com/industries/chemicals/our-insights/how-plastics-waste-recycling-could-transformthe-chemical-industry
204 https://open.overheid.nl/documenten/ronl-c4dcf201f4b0a9fffa6b5e7b9725c74dcb8e39b0/pdf [49] CE Delft, 2019; Chemical recycling in waste policy.

8. Cotton

8.1 Policy and Regulations

This chapter discusses the raw material ‘Cotton’ in more detail. Cotton has been chosen as it is a raw material with potential for higher quality forms of processing.

Cotton as such does not have a sector plan, but sector plan 5 of LAP3 is relevant here, namely textiles. This sector plan covers textiles and footwear that are collected separately by both individuals and businesses. It also includes remnants from the textile processing industry. The minimum standards set out in this sector plan are broken down into waste that can or cannot be reused or recycled. Waste suitable for reuse or recycling is defined as a minimum standard as reuse or recycling, and waste not suitable for reuse or recycling is defined as minimum standard as ‘other recovery (e.g. primary use as fuel)’[205].

Most of the figures used in this section of the Textile Report are for textiles. This is therefore the starting point. If figures are used specifically for cotton, this will be indicated.

8.2 Current Processing

Pre-trial process

Textiles collected go to collection companies. These can sort the textiles by themselves or resell them to sorting companies. Textiles are divided into categories and qualities, each of which has a separate processing and marketing pathway as a product/material. This creates a fraction of textiles to be processed, which can be partly cotton but also other materials or a blend of materials. Everything that is not textile (think knots and zips) is removed. Part of the textiles are also lost in this process, at around 10-15%. In the case of cotton, a further 5% of the material is lost during the recycling process, as fibres are worn out and fall apart during fiberization[206].

Processing

For textiles in the broad sense, 20 % of the separately collected textiles were suitable for reuse in 2021. Just over 10% are recycled and almost 60% incinerated. It is unclear what will happen to them, at around 10%[207]. This combustion generates energy[208]. Specifically for cotton, it is currently mostly done by mechanical processing to produce yarn, mattress stuffing, sound or heat/cold insulation materials, geotextile, or to process polishing cloths. In mechanical recycling also, about 5% is lost due to excessive wear. Cotton lost is burnt in an incineration plant.

Textiles and therefore cotton are the ones that are still hand-held and prepared for reuse. Mechanical recycling to fibreload cotton yarn is considered high-quality recycling and can avoid emissions equivalent to 2 740 kg CO2 equivalents[209]. This represents a net result of 2 440 kg of CO2 equivalents. Chemical recycling is used to recover cellulose. Of these, artificial fibres are produced. This is not widely used in practice. No open data is available for this[55].

205 LAP3 – Sector plan 5

206 CE_Delft_190400_Climate impact_waste processing routes_Netherlands_March2021_DEF.pdf (circulus.nl)

207 Circular Textiles Monitoring Policy Programme (overheid.nl)

208 Textile recycling: what are the options today? (vdp.com)

209 CE_Delft_190400_Climate impact_waste processing routes_Netherlands_March2021_DEF.pdf (circulus.nl)

55

https://www.circulus.nl/upload/file/
CE_Delft_190400_Klimaatimpact_afvalverwerkroutes_Nederland_Maart20

8.3 Autonomous developments and potential future processing

Current consumer trends around textiles increase the need to achieve high-quality forms of processing. Sales of clothing are increasing, partly because of the growing global population and because clothing is increasingly seen as a disposable product. From the supply side, there is also an increasing number of clothing items on the market in the Netherlands[210]. Another consumer trend around textiles is the advent of eco-performance, which makes it easier for consumers to buy clothing. People can order from their own home and often choose the option to pay afterwards. These factors often lead consumers to order multiple sizes, some of which are returned, thereby increasing traffic flows. It makes it attractive to consumers to buy more. On the other hand, there are also studies showing that online shoppers are less harmful than physically going to the shop to shopper[211].

In 2021, almost 45% of textiles were discarded via residual household waste or corporate waste[58]. Sectoral plan 5 indicates that the residual textile content remains at 4 %, some of which would be suitable for recycling or even reuse. Sector plan 5 of the LAP3 explains that from an environmental perspective, 'reuse' is the most desirable form of processing[59]. However, a minimum standard such as 'preparation for reuse' is not possible because sorting for reuse is not yet possible in all cases, for example textiles that have not yet been collected separately. Recycling is also often retained for security and/or financial reasons. It is expected that producers will increasingly use textile fibres for the production of clothing. Many developments and innovation take place around different forms of chemical and mechanical recycling[212]. Only in mechanical recycling can cotton be reprocessed into natural cotton fibres. Chemical recycling results in an artificial fibre.

As set out in sectoral plan 5, a development takes place in sorting (by composition and colour), removing zips, buttons, etc., and shredding or shredding into bars that are then shredded elsewhere. At the same time, this development is hindered by the growing operations of textiles such as finishing, water-repellent coating and by the dyeing of clothes. There is also a growing problem that the quality of textiles is getting worse. As a result, the textiles are increasingly wear out and therefore more and less suitable for reuse[213]. One example is the use of polyester as a material in clothing. Microplastic particles are released during use and wear. This may thus affect the recycled cotton content, as recycled cotton fibres are always mixed with other (possibly microplastic) fibres for reinforcement, such as polyester. Washing machine filters are under development that can filter microplastics from certain textiles. The review of the EU Ecodesign Implementing Regulation for washing machines is currently examining the possibility of making the use of such filters compulsory[214].

At the same time, the fashion world is also characterised by a reverse movement with the slow fashion movement, a movement that aims to achieve timeless collections with high-quality clothes, and long-lasting ecological clothes. The scale of this movement is currently small. Great fast fashion helped lift this movement by new branding of the collection as 'greenwashing'.[215]

210 How does clothing harm the environment? Milieu Centraal (Centre for the Environment)
211 Ey the last mile in Dutch E-commerce (retailer.nl) [58]
Monitoring policy programme circular textiles (overheid.nl)
[59] Idem.
212 KplusV. Fast fashion research.
213 Textiles as secondary raw material (cpb.nl) and Parliamentary Paper 32852, No 95 Overheid.nl > Official announcements (official announcements.nl)
214 PDF (government.nl)
215 Fast fashion brands are increasingly sustainable, not necessarily a party worth doing this Blog Duurzame Apparel Project Cece

Clothing is currently being sold with incorrect labelling compositions claims. Over 75% of these garments were made up of one fibre type, the other quarter of which consisted of several fibre types[64]. This lack of clarity and inaccuracy complicates the recycling process.

Three recycling methods have been examined at an earlier stage, commissioned by the Ministry, namely:

- Fibreboards for yarn spinning
- Fiberglass for insulation boards in the automotive industry Processing into cleaning cloths[65].

Saxion has also studied a form of chemical recycling in which viscose is produced, artificial fibres.[66] This form of recycling is also taken into account in the considerations below.

In the Netherlands, there are a number of start-ups spinning yarn made from recycled material. Fiberization for spinning this yarn requires the addition of new fibres to a sufficiently high quality. This is a maximum of 50%[67]. However, contacts from fiberglass companies indicate that they use a lower limit of 60% cotton. The rest may be a different material. This ‘other material’ may cover up to 4% elastane[68]. This is to enable multiple recycling of the recycled cotton.

For fiberglass and for making insulating plates for the automotive industry or cleaning cloths, no use of virgin fibres is required. During fibering, a certain amount of waste is produced by subsequent separation from other materials, such as metal and plastics. On average, this figure is 6%. This is processed in an incineration plant with energy recovery[69]. Many of the economic operators using recycled cotton (by spinning) are located abroad (e.g. Italy, Spain and Morocco).

8.4 Considerations in choosing a recycling standard

The minimum standard for cotton is currently recycling when the piece of textile can be recycled with cotton. However, cotton may be incorporated in textiles where other raw materials cannot be recycled/reused, resulting in the minimum standard of ‘other recovery’. Good cotton fibres are currently being lost. This can thus be a setback to the circularity target range. If the textile piece with cotton is recyclable, it is useful to set a recycling standard here. This is because fibre for yarn spinning can be processed 2[nd] times in the same application, as opposed to other forms of recycling such as fiberglass for cleaning cloths or fiberglass for use in insulation boards for the automotive industry or chemical recycling.

Recycling for yarn spinning scores in an mLCA 5.5 times better than processing into insulating plates[70]. In contrast to processing to insulating plates, the yarn can also be recycled several times.

[64] PDF (overheid.nl)

[65] https://lap3.nl/publish/pages/151977/vervolgproject-hoogwaardige-recycling-eindrapport-2018-05-17.pdf

[66] ‘50 years ago we looked at the moon, now it is high time to look back at Earth’ Saxion University of Applied Sciences

[67] https://lap3.nl/publish/pages/151977/vervolgproject-hoogwaardige-recycling-eindrapport-2018-05-17.pdf [68] Recycled yarns of worn clothing: Two Dutch companies set up an innovative chain (fashion.be)

[69] https://lap3.nl/publish/pages/151977/vervolgproject-hoogwaardige-recycling-eindrapport-2018-05-17.pdf

[70] https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjw7MGvoqCAxWSgv0HHXE3D9wQFnoECBYQAQ&url=https%3A%2F%2Flap3.nl%2Fpublich%2F151977%2FvHigh-Quality-Recycling-Final Report-2018-05-17.pdf&usg=AOvVaw0rCmlZrmKlnTX2dbsA12Ro&opi=89978449

This avoids high volumes of water use and CO2 emissions in the production of new cotton fibres. It should be noted that this is only possible for virgin recycled cotton fibres, as dyed cotton fibres cannot be recycled again.

Despite the fact that the Netherlands is not very far from using fibre spinning techniques, the technique itself is advanced and has been used more frequently in other countries. This means that an investment is required to implement the technique here, or that collaboration with foreign partners who do have the techniques in place should be sought. If the Netherlands is unable to use this technique when setting the fibres for yarn spinning, the setting of the recycling standard will become less attractive, as the cotton will have to be exported and this will increase transport distances.

In the longer term, fiberglass may be economically viable, but this will have to be demonstrated in practice. The start-ups do not allow a clear conclusion on this yet. Sales can grow if supply is also growing. For both the market and the public sector, a pain point is that not all textiles containing cotton will be suitable for fiberisation for yarn spinning. This complicates the implementation of steering of the process.

9. Wood

9.1 Policy and Regulations

Wood falls under sector plan 36 of LAP3. Sector plan 36 covers all waste wood, except waste from wood packaging and pruning waste. A-timber, B-timber and Chout are distinguished. A-wood is unpainted and untreated wood. Class B wood is painted, varnished and/or glued wood, which is not included in Class A wood or Class C wood. Class C wood is impregnated wood, which is treated wood into which substances have been injected, whether or not under pressure, in order to extend its useful life. These include wolmanised C wood (CCwood and CCA wood)[216].

This document focuses on A-wood and B-wood, as several studies are available. Both of these wood species have 'other recovery' as minimum standard in the LAP.

9.2 Current Processing

Pre-trial process
Sectoral plan 36 covers a large number of timber flows that are collected or delivered separately. Separate waste should continue the chain separately and not be mixed. Incidentally, A and B wood belongs to one waste category and therefore does not have to be collected separately. Wood waste (including sawdust, shavings and chips) from wood processing is also covered by the sector plan.

Processing
Wood and wood A and B are often collected together and not separated, they often pass through the same processes together. In 2015, about 2/3 of the A and B wood that was not burned was used to make pallet bobbins in the Netherlands. 1/3 of the A and B wood was exported to Belgium and Germany to manufacture particle board. Wood is also used as a fuel for power plants, for example in the form of pellets. This is not the most sustainable solution, but avoids the use of fossil fuels. Also, each tonne of wood used as biomass saves approximately 775 kg of CO2[217].

Also, some of the waste wood, consisting of A and/or B wood, is exported via cross-border transport for recycling or use as biomass in other EU countries[218].

9.3 Autonomous developments and potential future processing

In the market, processing currently focuses on two forms of recycling: recycling in particle board and recycling in pressed wood products, mainly pallets. An experimental study is being carried out into the chemical recycling process for wood to sugars and lignin. At present, only pruning waste is considered, which is not covered by the wood sector plan. Initial analyses of this point show that there is a potential for environmental gain[219]. In the Netherlands, most developments are in the area of chemical recycling, while in Belgium and Germany the developments are mainly in mechanical recycling[220].

216 36 Wood - LAP3
217 CE_Delft_210250_Veoperations routes_van_afvalhout_Def.pdf (cedelft.eu)
218 CE_Delft_210250_Veoperations routes_van_afvalhout_Def.pdf (cedelft.eu)
219 CE_Delft_210250_Veoperations routes_van_afvalhout_Def.pdf (cedelft.eu)
220 CE_Delft_210250_Veoperations routes_van_afvalhout_Def.pdf (cedelft.eu)

9.4 Considerations in choosing a recycling standard

Setting a minimum standard will have an impact on stimulating circularity target achievement. Both forms of recycling (including mechanical recycling (recycling into particle board and recycling into pressed wood products) increase the use/recycling of wood before it is used for energy generation. Thus, both forms of mechanical recycling save on primary raw materials and the material is processed in a higher quality than under the current minimum standard. The material can also be used multiple times in both alternatives, especially if different forms of recycling are used. Preventing the shredding and removing of A and B wood is then an important focus.

The techniques for these forms of recycling are in place and can process most of the supply of A and B waste wood. Therefore, there is no need to set a recycling standard in order to encourage recycling. In this respect, it is important to ensure in the recycling process that a minimum amount of A-wood to be determined remains available for processing a large proportion of Bwood, as a large proportion of B-wood depends on mixing with A-wood.

Full wood is one big piece, dense wood, and wood chips are wood chips. Full-wood recycling generates a higher environmental benefit than in the case of wood chips cutting. This is because the impact of full wood is greater than that of wood chips, which is a by-product of this sector plan. This difference is significant. For example, triple recycling into particle board that saves wood chips generates profits of only 22 kg of CO2, whereas the latter is 412 kg of CO2 for whole wood. For pressing to pallets, this is 32 kg of CO2 savings for wood chips and 431 kg of CO2 savings for full-wood cuts per triple recycling cycle. Saving 32 kg CO2 compared to saving 431 kg CO2 when the wood chips are triple recycled into wood pellets (pallets and pallet bobbins).[221] In cases where triple recycling leads to savings in wood chips, a WIP scores better for CO2 than triple recycling of wood chips because it also provides energy. This means that setting a recycling standard based on kg of CO2 would save money and would need to be set for recycling into wood pellets (pallets and pallet bobbins).

The two recycling options have opposite impacts on surroundings and realisability. Recycling to pallets has a higher avoided CO2 emissions in kg per tonne of waste wood than recycling to particle board. However, there is already a large supply of pallets. Supply may be larger than the consumer market in setting up recycling to pallets as a recycling standard[222]. The point of attention is that there will be no market for them. There is insufficient demand for attractive alternatives. There is also demand for wood from the thermal processors, as the demand for green energy is growing.

Prescribing a specific recycling method is legally feasible for the administration. It is also practically feasible and manageable for the market. However, the economic feasibility of recycling to pallets/pallet bobbins is limited. The market is not large enough to create outlets. It should be noted, however, that there may also be other potential outlets, outside the recycling options examined. On the other hand, the economic viability of recycling into particle board is sufficient. It is an already existing process. However, an investment is required by the particle board producers and a stable market with a decreasing role for bioenergy subsidies is required[223]. A final focus in realisability is that a significant proportion of waste wood is not obtained directly from collection, but comes from construction and demolition waste and residual waste by sorting.

Prescribing one specific form of recycling therefore comes up against a number of concerns. Allowing multiple forms of recycling can actually help to encourage recycling. The primary goal should be to scale up processing capacity in the broadest sense. At a later stage, phasing out the low-grade forms of recycling could be considered. Currently, recycling in

221 CE_Delft_2.F93.1_High-quality recycling

222 At risk, pallets will be used to generate energy, thereby failing to meet the circularity target.

223 Final report to a Wood Action Plan

Dutch flows is no longer carried out or takes place abroad. This should be taken into account when setting a recycling standard.

10. Nappies and incontinence materials

10.1 Policy and Regulations

Diapers and incontinence aids are covered by Sectoral Plan No 84 of LAP3. Sectoral plan 84 covers ‘other mono-flows’, the recycling of which is both desirable and technically possible. The minimum standard for nappies and incontinence materials is ‘incineration as a form of disposal’. The LAP3 also states that higher-quality forms of processing, in which parts of the material are fed back into the chain through recycling, are only permitted when these materials can be safely used.

10.2 Current Processing

Pre-trial process
The waste stream depends on the collection structure. It is unclear how many Dutch municipalities and companies have a form of separate collection for nappies and incontinence materials. Several care facilities for the elderly have introduced separate collection of incontinence materials. Municipalities that collect separately tend to do this by means of containers at central sites such as care centres and day care centres, thus encouraging initiatives from other organisations.
Municipalities that do not collect separately see the under-recycling capacity as the main bottleneck[224].

Processing
Nappies and incontinence materials contain three main components: cellulose, plastics and SAPs (super-absorbent polymers)[225]. Used nappies and incontinence materials account for around 400 million kg of waste in the Netherlands[226]. According to the current form of processing, 96% of the collected nappies and incontinence materials are still incinerated[82] with energy recovery. The main reason for incinerating is limited recycling capacity.

There is currently only one processor that processes the remaining 4% via the Elsinga technique. Thermal hydrolysis is applied here, producing plastics, fertilisers, biogas and compost from the waste. For thermal hydrolysis, nappies are converted into a liquid mixture by steam (high pressure (40 bar)) and a high temperature. When this is cooled, plastics are separated from the rest of the slurry (7% and 93%, respectively). Plastics form a type of spheres and are prepared for recycling and slurry is digested and therefore provides energy. Cellulose is reduced, allowing it to be transformed into biogas. Biogas is used to generate electricity and generate heat. This heat is used at the same plant to maintain temperatures in certain processes[83]. Fibre/cellulose recovery techniques and SAPs are under examination, but are not yet operational.

For another processing method (FaterSmart), a pilot was carried out from the EMBRACED project in a period between 2019 and 2022. According to this method, the waste is treated in a rotary autoclave with high-pressure steam[227]. The product is shredder, dried and separated. This is followed by two streams: the plastics and a combined stream of cellulose/SAPs, which is separated from the SAPs in a next step.

Both processes kill drugs and pathogens by high temperatures. Residual residues are incinerated and energy is generated.

224 Nappies and incontinence material collection survey results – VANG Household waste
225 Essity wants to recycle diapers - Recycling Netherlands
226 Processing nappies and incontinence materials in motion - VANG Household waste (vanghha.nl) 82 Processing nappies and incontinence materials in motion - VANG Household waste (vanier-hha.nl) 83 Nappies Recycling (vanier.nl raw material)
227 Comparative mLCA on waste treatment of disaper and incontinence material – SGS Search

10.3 Autonomous developments and potential future processing

Sectoral plan 84 of the LAP3 indicates that the minimum standard for nappies and incontinence materials will be changed once sufficient recycling capacity is available. The aim is to return 90% of plastic (excluding SAP) fractions to raw materials through recycling. For SAPs, the technique is not yet advanced enough to be recyclable. This has an impact on the process of assigning a certain form of recycling to the waste stream. The same applies to 90% of cellulose, which becomes available as raw material through recycling, or, through a fermentation step, leads to the production of biogas including a residue marketable as compost/soil improver[228]. It should be noted here that, during the drafting of this partial report, a procedure is still under way with the Fertiliser Committee via the Ministry of Agriculture, Nature and Food Quality. Thus, there is formally no permission to use a residual stream from the diaper and incontinence cycling as fertiliser or as co-digestion material.

In recent years, several recycling techniques have been developed or are under development, including the two above-mentioned techniques. For example, there are developments that make cellulose fibres released and allow them to be reused as paper. However, for unknown reasons, this industry claims that it is not yet ready to use fibres from sources other than the source-segregated paper and cardboard. An increase in the number of municipalities offering separate collection is also expected when processing capacity is realised[229]. Recycling capacity initiatives are already underway. Grants have already been awarded for this purpose. This includes Meerlanden and Renewi. This also contributes to the introduction of extended producer responsibility (EPR). Municipalities could prepare for this as it has an impact on a collection system[87].

New techniques are also being developed. Diaper Recycling Europe is working on a go-around of the Knowaste technique. In this process, the material is washed immediately and taken out by a shredder. The plastic is then separated from the other material. The remainder is sterilised. What makes the Diaper Recycling Europe process unique is that the SAPs are deactivated in the follow-up process. This process is a patent. The remainder is cleaned once more from drug residues. Throughout this process, all water and air is purified[230]. This method removes only 2% from the waste level. Multi-country partners work with ARN. In Japan, a new technique, Unicarm, has been developed that treats non-reusable slurries and SAPs in a unique way. The slurry is passed through a special wax treatment that kills the bacteria and treats the SAPs with a specific acid, allowing it to absorb more. These techniques increase the quality of the material to make it suitable for reuse again. Renewi elaborates on the Elsinga method.

Another form of higher quality processing, namely reuse, is the use of a washable nappy. It can be washed approximately 450 times. The only waste is the stool, including the receptacle. The design, business models and new collaborations are considered[231].

In addition to higher quality forms of processing, there is also a focus on prevention. At present, the period during which children use nappies in the Netherlands is also longer than in several neighbouring countries[232]. A lot of impact can be achieved with regard to the duration of sensory training.

228 Sector plan 84
229 Exploration of bottlenecks and solutions for the closure of the nappies and incontinence materials chain – Tauw (2021) [87] R001 1287928 V04 prr NL (overheid.nl)
230 The Waste Recycling Process - Waste Technologies
231 Life cycle analysis of washable and single-dose diapers – Rijkswaterstaat Publication Platform
232 R001 1287928 V04 prr NL (overheid.nl)

Furthermore, the government is directed towards extended producer responsibility (EPR) for nappies and incontinence materials[233]. Through the RVO, the State is promoting investments in diaper recycling facilities in several schemes through grants and other forms of financing. This can boost potential recyclers. However, many processing parties are still waiting, as they want to see what will happen to producers once the RPV is established and enters into force. Many recyclers also first want to make agreements with a producer responsibility organisation, which is still to be set up. They want to focus their processing techniques on regaining cellulose for its use as a new raw material. Currently, only plastic is recovered. New recycling techniques will also require the recovery of cellulose and SAPs in order to be considered a fully-fledged new recycling technique.

Efforts to improve recycling techniques are all important, as the population is ageing. This increases the use of incontinence materials and the associated waste quantities.

10.4 Considerations in choosing a recycling standard

The current minimum standard for nappies and incontinence materials is ‘incineration as a form of disposal’. However, sectoral plan 84 does state a desire to change this minimum standard once sufficient recycling capacity is available. Regarding circularity targets, much profit can still be achieved by requiring an increase in the minimum standard. By increasing the minimum standard, much more material is recycled rather than incinerated. Therefore, the amount of incineration decreases and the amount of residue left to landfill remains lower. However, there is no difference in the two alternatives examined (Elsinga technique and pilot of EMBRACED project) for the circularity target range. The techniques are similar in terms of profit on target circularity compared to the reference situation. The UNICHARM technique from Japan will not be taken into account in this comparison because it is uncertain whether, when and to what extent it will affect the situation in the Netherlands.

The forms of recycling examined do not have a significant distinctive environmental impact, as defined in Table 2.2. A major impact is on energy use. This is higher than if it is burned in its entirety. This process also entails the loss of energy recovery through combustion. On the other hand, it does reduce emissions. The GWP scores of the initiatives are similar: -103 kg CO2eq for the Elsinga method versus -103 kg CO2 eq for the FaterSmart method. The absolute difference in impacts on global warming and human health between incineration and a form of recycling by thermal hydrolysis is so great that it would be recommended to switch to recycling (incineration 376.6 kg CO2eq; TDH -104.4 kg CO2eq)[234]. However, this focus does not make any difference in setting a recycling standard or not. Other concerns are mainly related to hygiene, medicine residues and odour. This primarily affects health risks to people and the environment. These concerns are issues that will be addressed when recycled and have been taken into account in the assessment.

The establishment of the recycling standard is legally possible and practically enforceable for the administration. Financial enforceability is more difficult. As there are not many companies for whom the techniques are available, the authorities will need to grant more exemptions. This takes time, money, and has negative effects on nature. However, the indirect costs and/or the long (or longer) term costs for the public administration are positive. This is due to the reduction of negative impacts on human health from recycling techniques. However, there is no significant difference in this reduced impact between the two recycling techniques. In the case of ARN, no new factory is needed[235]. This saves the cost of purchasing and fitting out the factory and, in addition, the ‘one-off’ environmental impact. For both methods, the processing capacity is not currently sufficient but can be realised in the foreseeable future. The issue here is therefore primarily the financial viability of the recycling side. It is also linked to the front of the chain, for example, with the entry into force of the EPR.

233 Processing nappies and incontinence materials in motion - VANG Household waste (vang-hha.nl)
234 CE_Delft_2M03_LCA_of_waste_treatment_of_diaper_material_Def.pdf (cedelft.eu)
235 From Louer to Grondstof https://www.vanluiernaargrondstof.nl/

Municipalities and organisations such as nurseries and elderly care are in the pipeline and already want to facilitate separate collection. There are also already municipalities and care institutions where separate collection is the standard. Prescribing a processing technique is therefore technically feasible, but the feasibility is also partly dependent on necessary modifications on the collection side. The market will also need to invest rapidly when a recycling standard is imposed, as one of the methods mentioned above.

Increasing the minimum standard therefore appears to have positive effects and to be feasible. However, prescribing one specific processing method does not appear to be of added value, as the development of recycling techniques is still ongoing and it seems that the different methods examined lead to equivalent (positive) effects.

11. Review

Based on the analyses of the previous chapters, this section considers possible impacts of setting a recycling standard on circularity, landfilling and incineration, environmental impacts and realisability. For this consideration, it should be noted that it is based on the information provided by the small selection of flows and processing methods.

11.1 circularity target range

In general, setting a recycling standard would be a good opportunity to increase the level of recycling. Methods may also be selected based on those resulting in multiple use.

However, based on the analyses of the six waste streams examined, a number of comments can also be made. Each processing method sets its requirements for input, and generates a specific output. With regard to the input, for waste streams that are diversified (consisting of several sub-streams, such as plastics), a particular processing method can only process a specific sub-stream. In such cases, several processing methods may complement each other. As each processing method also has its specific output, it should be considered for each waste stream whether prescribing a processing method also leads to an output for which a consumer market is available. Again, there may be a preference for having several complementary processing methods.

Prescribing a processing method in principle has positive effects on the circularity target range, but it may also have a reverse side. The sector's innovative power could be disabled. This does not encourage developments leading to higher recycling or improved secondary products. In this case, the positive effect of prescribing a recycling method may ultimately negatively affect the circularity target range.

For some of the streams examined (such as plastics, wood and nappies/incontinence materials), it is concluded that setting a recycling standard for these streams does not add value because the flows are too heterogeneous for a specific recycling standard or multiple promising forms of recycling are available.

In the circularity target range, this alternative scores positively (+)

11.2 Landfilling and incineration

The waste streams examined are too diverse to identify concrete impacts for landfilling and incineration. In general, however, it can be said that prescribing a processing method improves the degree of recycling, the quality of the secondary product and/or the degree of re-use. In general, the conclusion is that the level of landfilling and incineration decreases. Therefore, this alternative scores positively in the topic of landfilling and incineration (+).

11.3 Environmental impact

Similarly, for environmental impacts, the waste streams and processing techniques examined are too specific to determine overall impacts for the environment.

However, in general terms, where processing methods are prescribed which lead to an improvement in the quality of the secondary product and/or increase the degree of re-use, this may have positive effects on the environment. This is because it makes it possible to avoid the use of primary raw materials and to avoid high amounts of water use and CO2 emissions in the production of new products when reused.

In addition, for processing methods with comparable results in the target range and feasibility, this alternative offers the option of prescribing the most favourable environmental impacts. For example, in the processing of wood, the processing into pallets leads to greater savings in CO2 emissions compared to processing into particle board.

However, it should be noted that environmental impacts of processing methods may evolve over time, for example, through changes in supply or changes elsewhere in the chain. For the wood example, the environmental impacts in the LCA are mainly determined by the material saving the secondary product. In the case of full-scale savings, this scores are much better than in the case of savings from wood. In the concrete example, the use of granules in foundations alone scores better than as aggregates because they save sand cement in foundations, however, there is currently no alternative to sand cement. Sand cement is a high MKI in cement production.

The choice of a processing method is not primarily determined on the basis of environmental effects considerations. In addition, it is difficult to identify concrete effects based on the cases described. Therefore, overall, the effects on the environment of this alternative are assessed as neutral (0).

11.4 Realisability

As already mentioned in section 11.1, for some recycling methods, the reliance on accurate input is high. Some methods require a very pure mono-flow as an input. This is also linked to the collection. In particular, there is considerable gain in terms of higher-quality recycling. In order to ensure the feasibility of a prescribed processing method, this will have to be accompanied by improving the collection, separation and sorting process. Examples are nappies and incontinence materials, with processing highly dependent on the collection method, and plastics with multiple sub-streams with very different possibilities depending on the type of plastic, composition and interfering substances.

As indicated in Section 11.1, the introduction of a recycling standard may also have a downside, i.e. the risk of innovation in new recycling techniques stagnation in the Netherlands. Where only one form of recycling is allowed, there is a lack of clarity about the reward for developing an innovation with a potential to improve its environmental impact. Thus, the choice of the recycling standard will only be logical if it is very clear that the existing recycling method is the best possible method and that it is unlikely that a better method can be developed. This is very difficult to determine because future innovations cannot be predicted. If there are nevertheless developments in the recycling of the substance concerned abroad, the Netherlands should be able to anticipate this in time in order not to catch up with technology. However, this poses the risk that processors will heavily rely on the recycling standard and will not be able to switch to it if this happens too quickly.

One point of attention when prescribing a processing method is that it indirectly guides the supply of secondary products, as certain processing methods also produce specific outputs. This may lead to an oversupply of certain secondary substances. It is important to have a clear image of the potential market for these cases.

However, it can be concluded from the cases described that techniques are generally available. This does not prevent the use of certain processing methods.

Feasibility is based on the above considerations. In general, there are no feasibility issues or clear benefits. The feasibility assessment is therefore deemed to be neutral (0).

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EIA
Circular Materials Plan

Partial report 6: Sector plans 1, 2, 9, 27 and 28; incinerate vs recy-
Cling +
Landfill

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project number 0483395.100
final revision 3.0
21 June 2024

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Circular Materials Plan EIA

Partial report 6: sector plans 1, 2, 9, 27 and 28; incineration vs recycling + landfilling

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1. Introduction

1.1 Circular Materials Plan

The current National Waste Management Plan (LAP3) expires at the end of 2023 and will therefore be revised. This revision is accompanied by a shift in emphasis. The LAP focused on good waste management, while the (first) Circular Materials Plan (CMP) increases the ambition to retain raw materials for as long and as long as possible and to reduce the use of primary raw materials as much as possible. The CMP is therefore more in line with the transition towards a circular economy than the LAP3.

The environmental impact assessment procedure and the environmental impact assessment (EIA), as a product, provide an objective picture of the environmental impacts of a number of policy choices. The EIA is a separate product from the CMP. The EIA provides information enabling the CMP policy choices to be made.

Six policy options examined their environmental impacts and included them in six separate sub-reports. The overall environmental impact assessment (EIA) has been prepared on the basis of these sub-reports.

The study of the functioning of the alternatives and their possible impact involved, for example, drawing on the knowledge and experience of a number of experts in the form of an expert team consulted several times. Where specific information from (members of) the expert team has been used, this is explicitly mentioned. The use of the expert team's input has been further detailed if necessary. The content of this report is the responsibility of the authors.

This partial report relates to the topic 'Minimum standard sector plans 1, 2, 9, 27 and 28: incineration vs. Recycling + landfilling': residual household waste (sector plan 1), residual business waste (sector plan 2), parts of waste from public spaces (sector plan 9), shredder waste (sector plan 27) and construction and demolition waste (sector plan 28).

1.2 Minimum standard sector plans; incineration versus recycling + landfilling

The LAP defines incineration as a minimum standard for a number of cases. This includes residual household waste (sector plan 1), residual business waste (sector plan 2), parts of waste from public spaces (sector plan 9), shredder waste (sector plan 27) and construction and demolition waste (sector plan 28). When referring to waste streams in this reporting, these are five flows. The fact that incineration is the minimum standard for these waste streams means that there is a restriction on alternative forms of processing. They are not allowed if this leads to the deposition of residues/partial fractions. The reason for this long-standing policy is to prevent the removal of a relatively small amount of combustible material from this waste stream, with a considerable remaining portion to be deposited. Full combustion with energy recovery is preferred.

With a growing focus on the circular economy, the need to continue with the ban on landfilling in a sufficiently rigid manner from the minimum standards has been questioned. More processing options might be offered, allowing bulk disposal of the waste for recycling and a small inert area for landfilling. This policy choice, however, requires a certain objective justification to be provided when a certain amount of landfill is acceptable. Is 1% recycling and 99% landfilling better than 100% incineration? Or should it be at least 50% recycling? Or does it depend on the components that are recycled?[236]

1.3 Synopsis

236 Reaction note on views –NRD for Environmental Impact Assessment for the Circular Materials Plan

Chapter 2 describes the assessment framework and how the impacts on alternatives are presented. Chapter 3 describes the baseline situation. Next, Chapter 4 describes the alternatives and their assessment[237]. Finally, Chapter 5 presents a full discussion of the alternatives.

237 The structure of Chapter 4 is different in the partial report from that of the others. This has been done because the chosen approach to impact assessment is to ensure that the difference between the alternatives is only present in the topic. This will allow the alternatives to be dealt with jointly in the target areas and environmental impacts.

2. Assessment framework

2.1 Introduction and overview

The assessment framework is set out in the Note on the scope and level of detail (NRD) for this EIA. Following the input and advice received on the ETD, some adjustments have been made to the assessment framework and have been incorporated in the final ETD[238].

In the context of the preparation of this EIA, the evaluation framework was further elaborated and some adjustments were made, also following the first finger exercises with the impact assessment and comments made in the expert meetings.

The main changes made to the assessment framework in the NRD are:

1. A level of aggregation has been added and the aspects and sub-targets are below that level. This leads to a two-topic format focusing on objectives and target ranges, respectively on circularity target and landfill and incineration target range, on environmental impacts and on feasibility.
2. In the target achievement topics, the second level of aggregation consists of sub-targets and in the topics of environmental impact and feasibility the second level of aggregation consists of aspects;
3. Some aspects are formulated in a slightly different way than in the NRD; for example, in the case of raw materials, all raw materials (and not only renewable or recyclable) are considered, with the ratio of renewable and non-renewable attention;
4. The feasibility theme has been divided into feasibility (involving the government) and feasibility (how market players can deal with the measures included in the alternatives); this difference between the government and the market is important in making the assessments of how the alternatives will work in practice. This is because businesses operating in the market play an entirely different role to that of public authorities. This is because operators make daily choices about the way materials are processed (cleaning or immobilisation), but also make choices about investments in treatment and processing capacity.
5. Some aspects have been added, namely energy use, water use and consumer market.

This leads to the assessment framework as shown in Table 2.1 and Table 2.2. This classification, comprising four topics and a total of 11 sub-objectives and aspects, was also used in the summary assessments of the alternatives. A higher number of indicators have been identified under the sub-targets and aspects. These are explained in section 2.2.

Table 2.1: Target Scope Assessment Framework

	Efficient use of resources
	Stimulating high-quality waste processing
	Impact on the quality of secondary materials, including in a possible next cycle of recycling
	Contribution to reducing landfilling and incineration

238 Reaction Note on Views – NRD for Environmental Impact Assessment for the Circular Materials Plan; Ministry of Infrastructure and Water Management, January 2023

Table 2.2: Impact assessment framework

Environmental impact	Greenhouse gas emissions
	Energy use
	Water use
	Nitrogen emissions
	Risks to man and the environment from spreading harmful substances
Realisability	Practicability and enforceability (government)
	Feasibility and compliance (market)

The NRD indicates that when assessing the alternatives (per component), specific effects or concerns are manifest that are relevant for the assessment, but are not included in the assessment framework. Where relevant, the assessment framework may be supplemented by specific indicators.

Rating scale

A five-point scale (Table 2.3) is used to assess target achievement and impact. The assessment is always relative to the baseline situation, also referred to in this report as the base case.

In principle, the assessment is qualitative. Where possible, it is supported by (semi)quantitative evidence.

Table 2.3: Rating scale

	betekenis
++	zeker en substantieel positief effect
+	vermoedelijk en/of beperkt positief effect
0	neutraal effect
-	vermoedelijk en/of beperkt negatief effect
--	zeker en substantieel negatief effect

2.2 Further explanation on the assessment framework

Circularity target range

The indicators for this topic are presented in the diagram below (Table 2.4) and briefly explained. The order of the sub-targets and indicators is not indicative of the importance or weight. The starting point for the assessment is that, in principle, all indicators are of equal importance. Criteria weighting is applied in the context of further policy-making within the CMP. This part of the assessment framework relates to objectives and sub-objectives and has been defined accordingly. The underlying objectives of the policy are essentially to keep (soil) substances in the cycle as much as possible and to remove and retain pollutants from the cycle as much as possible. The latter can be done either by destroying contaminants (by burning or destroying them) or by dumping them in such a way as to prevent, as far as possible, any propagation into the environment, including in the long term.

The target achievement is divided by two dimensions relative to the NRD. The sub-targets for landfill and incineration have been addressed in their own context. Dumping and incineration inevitably result in material disappearing from the cycle. A first analysis showed that the circularity and

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for landfill/incineration, the opposite may be true, which could lead to loss of information when aggregating the supply and level assessments.

Table 2.4: Circularity sub-targets and indicators

	Efficient use of resources	Efficient use of primary raw materials	The less use of (primary) raw materials, the better. The rationale behind this is that primary raw materials are finite, and that the extraction and transport of primary raw materials can have significant (negative) environmental impacts.
		Renewable – non-renewable raw material ratio in the cycle	The larger the ratio of renewable – non-renewable raw materials in the cycle, the better.
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	This involves moving up as much as possible: for these indicators, the higher the hierarchy, the better. In scoring this indicator, attention is paid to the potential overlap with other indicators (in particular, ‘primary raw material use’). Due to the relatively gross division of the waste hierarchy, a distinction is also made within the steps
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	
		Share/percentage of substances moving to a lower level in the waste hierarchy	
	Impact on properties of secondary materials, including in any subsequent cycle of recycling	Applicability	If the secondary material is applied. This indicator evaluates whether the qualities of the secondary material are such that it is possible to apply them properly.
		Returnability	At the end of the period of use. This indicator looks at the ‘ease’ that can be achieved at the end of the period of use – after a raw material processing has been employed in the cycle. In order to do so, the qualities of the secondary material concerned must be such that they can be identified and taken back

		Workability	It is also important that the secondary material can be processed responsibly at the end of the period of use.

As part of the assessment framework, the '**high-quality'** of waste processing is examined. Further specification of the concept of 'high quality' is necessary to make this assessment effective. This report is based on the sole consideration of waste and the waste hierarchy is guiding the assessment of quality. This means that reuse (such as collected and reused beer bottles) is not considered. Depending on the efforts needed for reuse and its (environmental) impact, reuse will almost always be more positive than (high-quality) recycling. This also follows from the waste hierarchy.

Within this framework, the focus of this report is on the '**Raw Materials Conservation' aspect**. As indicated above, the basis of the waste hierarchy is decisive. Within the same step of the waste hierarchy, this report refers to higher-quality forms of recycling where material is kept in a material or product chain as much as possible and of the highest quality over as many cycles as possible. **Landfill and incineration target range**

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The indicators for this part of the target achievement of dumping and incineration are shown in the table below. The underlying objective for both indicators is to reduce the amount to be landfilled or incinerated.

Table 2.5: Sub-targets and indicators for landfilling and incineration

	Contribution to landfill/incineration restrictions	Landfill volume per year	The less, the better.
		Amount of incineration per year	The less, the better. The impact of substitute fuel was not included.

Environmental impact

To illustrate the environmental impacts of the alternatives, the assessment framework has identified four aspects, see Table 2.6.

Some overlapping indicators are included. For example, CO_2 emissions are related to the use of (fossil) energy sources such as oil, coal and natural gas. However, the individual indicators have been chosen as they do not completely overlap. For example, CO_2 emissions include sources other than fossil fuels (such as CO_2 released from cement in the production of concrete); and fossil fuels are also used as raw materials (e.g. in the production of plastics, see also Figure 2.1).

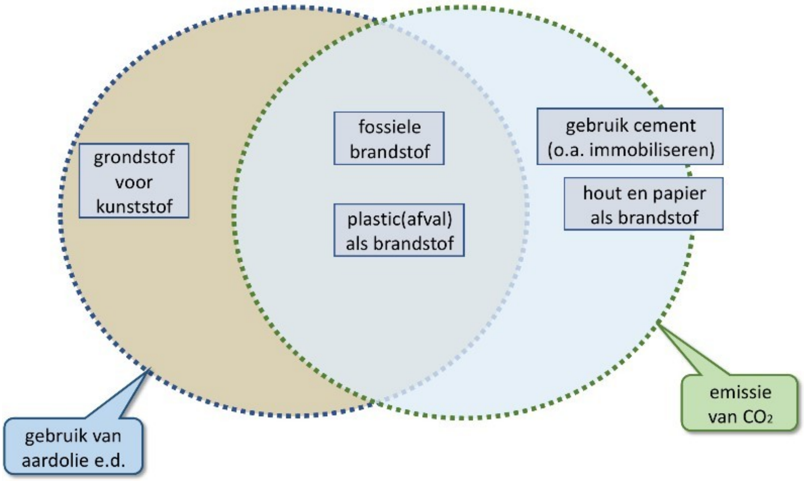

Figure 2.1: Relationship between CO2 emissions and fossil fuel use

For the use of energy, the indicator in question looks (only) at the energy use needed for the alternative in question (compared with the reference situation), for example for transport and for the processing operation in question. In line with the 'trias energetica', the underlying aim is to minimise the use of energy as a result of generating energy (fossil as well as renewable sources) has environmental effects. Moreover, this study did not specifically look at the potential for using non-fossil energy sources (and their impact on emissions).

For nitrogen emissions, it was decided to look at emissions rather than deposition. This has been done because the deposition site is bound, and nitrogen oxides are also relevant from an air quality perspective. The underlying aim is to minimise concentrations in the atmosphere and also to reduce nitrogen deposition in Natura 2000 areas.

The 'risks to people and the environment' aspect ultimately means that contaminants (which may be a threat to the ecosystem and human health) are kept out of the cycle as much as possible, and minimise the spread to the environment. Keeping waste out of the cycle can involve destruction (e.g. by incineration or biological breakdown), controlled storage (in a landfill) or immobilisation of contaminants. The environmental effects of these forms of processing may also differ.

Table 2.6: Environmental impact aspects and indicators

Environmental impact	Greenhouse gas emissions	Emissions (in CO_2 equivalents)	Annual emissions, including from energy use, such as from transport and other processes through the release of CO_2 and other greenhouse gases The aim is to limit it as much as possible. In CO_2 equivalent/year.
	Energy use	Use of fossil fuels	Due to the use of fossil fuels as a raw material and as a source of energy. Minimise the use of fossil fuels
		Energy use	Reducing the use of energy and water is positive in itself (as it also reduces the need for energy generation, water extraction, etc.). The less, the better
	Water use	Water use	
	Nitrogen emissions	NO_x emissions	Emissions instead of deposition
		NH_3 emissions	
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	It looks at the various parts of the chain. These are potential emissions from processing, incineration, landfill or use of materials as building materials. The time scale and the mechanisms by which it can spread are important, namely during secondary use (through leaching, erosion). etc.) at the end of secondary use (crushing, grinding, etc.)
		Contribution to reducing exceedance of standards in soil, water and air quality	Chain of Use, Life Cycle Human health risk assessment (via drinking water, food, atmosphere)

Realisability

For the assessment of alternatives, it is relevant to assess how the alternatives will work in practice. This is referred to as 'feasibility' (Table 2.7). Therefore, the feasibility, enforceability and economic feasibility of the alternatives have been considered. It is important to note the extent to which the **authorities** can implement the alternatives, the effort required and the costs involved. It is also relevant how the businesses operating in the **market** and required to implement the planned policy in practice can benefit from the measures envisaged, such as those contained in the alternatives. This will also give you an idea of how and to what extent alternatives will work in practice.

Table 2.7: Aspects and indicators realisability

Realisability	Practicability and enforceability (government)	Legal enforceability	It is legally possible; it is legally possible for the authorities to actually take the relevant measures (regulations, etc.).
		Practical enforceability	It assesses the practical feasibility of

			organising enforcement by the public authorities
		Financial enforceability	This relates to the costs of enforcement for the public authorities

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		Costs for the public administration, direct and indirect and/or longer-term	For example, costs for damage to the environment and damage to health
	Practicability and compliance (market)	Practicability practical	It is available, has sufficient capacity and can be accessed. This includes opportunities and risks: how does it work in practice for the market?
		Compliance with practical	This will assess whether, in practice, it is possible to meet market compliance conditions
		Financial compliance	Costs for fulfilling market conditions
		Economic feasibility	These are the costs and benefits of the processors operating in the market. Costs are determined by capital charges and operational costs (including charges). The benefits are generated by the sale of secondary (land) materials, energy, subsidies, sales market, etc.)

2.3 Assessment method

To allow the assessment of the impacts of the alternatives, a number of principles have been chosen. These include:

1. Separation of focus, impact and realisability assessments;
2. How to take the effects of substituting the use of materials and energy;
3. Reference situation to be used.

These principles are outlined below.

Impact assessment targets and effects: no adjustment to realisability

The evaluation of the impact of policy measures on the ground is an important consideration in the assessment of alternatives. After all, the final environmental impacts, and the degree to which it contributes to the achievement of the objectives, are the result of the combined 'technical' impacts of the policy options (for example, CO_2 emissions from a particular policy option) and the 'success' of the policy option in question on the ground. On balance, a policy measure that has a high technical-theoretical positive impact but is not applied in practice (for example because it is not economically feasible) will have little impact. In order to avoid double counting of impacts, but also to be able to make a proper balancing and possibly take additional measures, the approach taken in this EIA is as follows:

1. The evaluation of target achievement and environmental impacts was based on the substantive technical elaboration of the relevant policy option. These include, for example, the composition (level of pollution) of component streams, the use of energy and water in techniques needed for the policy option, and emissions of nitrogen oxides and CO_2. This assessment does not take into account the extent to which the technique in question will actually be deployed. This may mean that the assessment shows a best-case situation, either in part or in full.
2. When assessing the aspects within the topic, it is important to check whether the policy option in question will be implemented in practice and to what extent, in practice, this option will lead to a different use of techniques and processes (compared to the baseline).

3. Assessments for the individual aspects are summarised, followed by a final assessment, which explains and discusses the effects on the environment and realisability, for each alternative and topic covered. These considerations will explain whether and to what extent the target-range and impact assessments are influenced by the realisability assessments.
4. This approach helps to identify possible dilemmas and follow-up questions for each part, as policy options can be promising in terms of content but are inhibited by realising issues, and in such a case, what can be done to realise

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increase. This can be illustrated in Figure 2.2. The assessment of the impact on the two axes has been done independently.

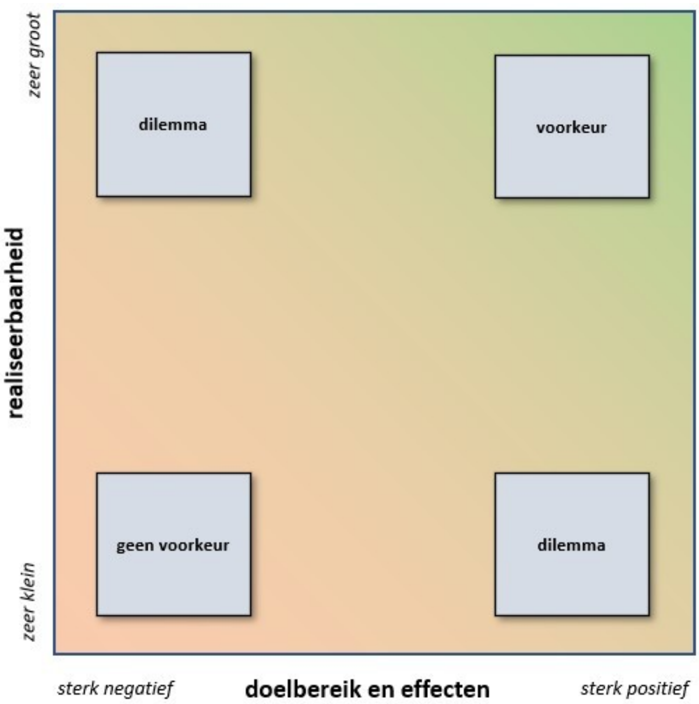

Figure 2.2: The ultimate desirability of alternatives is determined by target achievement and effects (horizontal axis) and feasibility (vertical axis)

Effects of substitution

This study looked at the effects of alternatives to substitution of materials and energy. For example, if the amount of waste to be incinerated decreases (due to a measure), the use of other energy sources (fossil and/or renewable) will increase, and if secondary material use increases, the use of primary material will decrease. When describing the environmental impacts of the alternatives, it has been described (where relevant) whether there may be second order environmental impacts. Where relevant, these have been included in the impact assessment. For example, if an alternative causes less waste to be incinerated or the calorific value of waste to be reduced has been considered as a consequence of the need to use other energy sources.

Reference situation

The effects of the alternatives are described and compared with the baseline situation, also referred to as the base case. The baseline is based on the policies and rules in force, without taking into account any deviations that may occur in practice. No evaluation of current policies and regulations was carried out under this EIA. In this report, we use the term ‘reference situation’.

3. Reference situation

3.1 Policies and Rules

Under current policies, the minimum standard for residual household waste, residual business waste, waste from public areas, shredder waste and construction demolition waste states that alternatives to incineration cannot lead to any landfilling, whereas the minimum standard is incineration. The Besluit stortplaatsen en stortverboden (Landfills and Dumping Bans Decree, Bssa) also bans the dumping of residues from post-separation of these streams. ~~The minimum standard means that~~ But current policies are in a busy place. The streams that are now incinerated are those that could potentially have been recycled. This is because post-separation causes additional south-eastern streams suitable for recycling. If a maximum recycling rate is applied, a non-combustible residue may eventually be disposed of, which then needs to be disposed of. The question is to what extent recycling and the resulting residue to be landfilled are proportionate to incineration.

For residual household waste (sector plan 1), residual waste from businesses (sector plan 2) and parts of waste from public spaces (sector plan 9), waste processors may be authorised under the current policy to separate streams for recycling as long as this does not result in a residue being landfilled. In practice, ferrous and non-ferrous metals are almost completely separated from these streams and plastic packaging is partially separated from the streams. At the same time, there is not always post-separation that will allow usable waste streams such as plastics to enter the incinerator. Figure 3.1 shows the current situation of this topic. This shows that after collection, a separation step is included. However, this step must not result in any unusable or non-combustible residue that must be deposited. This is indicated by a cross on the diagram. This may result in a higher proportion of the waste being incinerated in the aforementioned sectoral plans than is technically necessary.

For shredder waste (sector plan 27) and construction and demolition waste (sector plan 28), in addition to the minimum standard of incineration, there is also an obligation to separate certain streams provided that no residue can be landfilled. Shredder waste is metal and construction and demolition waste (CDW) is concerned: bituminous roofing, non-tar-containing asphalt, flat glass, gypsum blocks and plasterboard materials, roof gravel, fixtures, stony material, wood, plastic, metal, screened sand and hazardous waste[239].

239LAP 3.2 sector plan 27 and sector plan 28

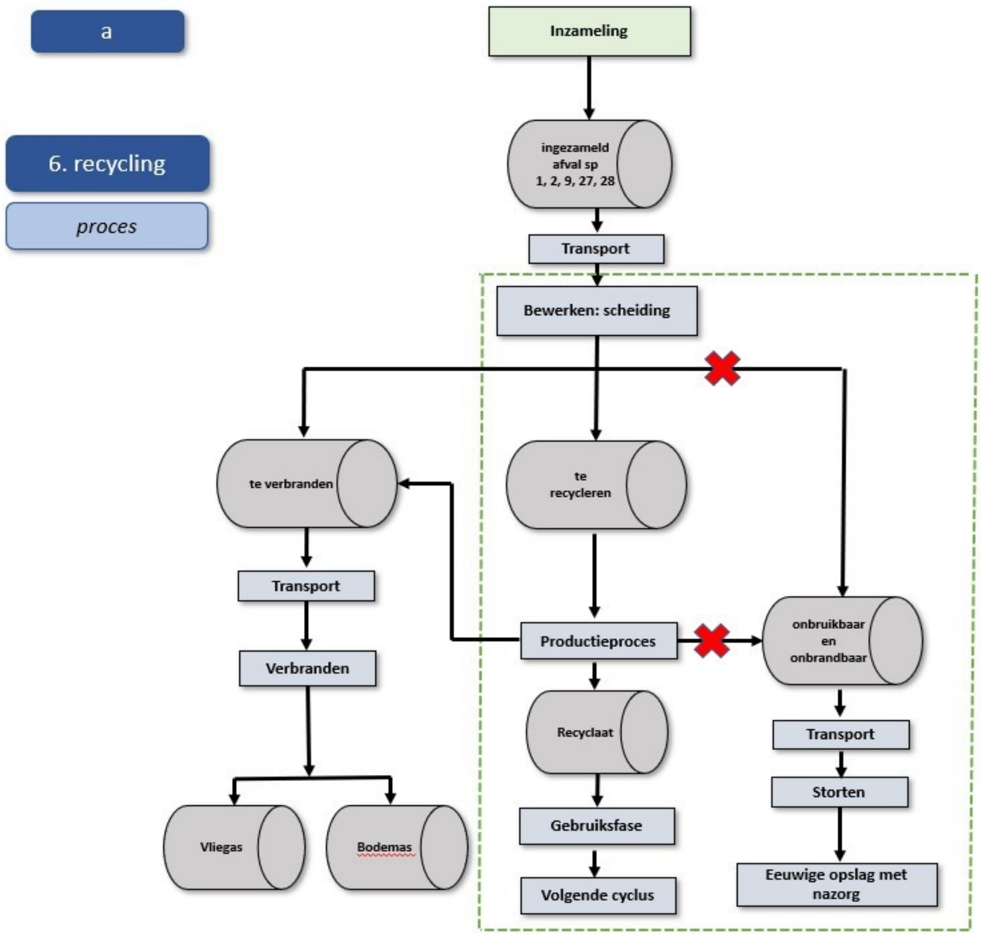

Figure 1.1. Process schedule corresponding to the Burning vs Recycling & Landfill Policy Topic

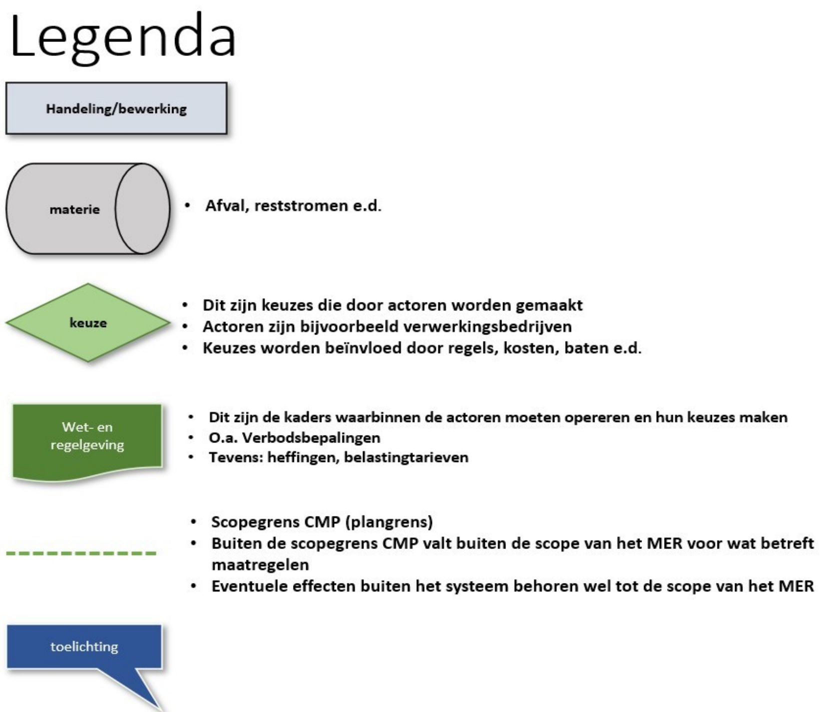

Figure 3.2. Key diagrams

3.2 Autonomous developments

As described in Section 3.1, in the current situation it is not possible to dump a fraction on the basis of the relevant minimum standard and because of the dumping ban. This reduces the amount of materials to be recycled and eventually incinerates more.

Since the 1990s, landfill has been reduced considerably. This is due, among other things, to the policy in the Bssa, the Wmb, the current LAP3 and LAP1 and LAP2. For the relevant sectoral plans, the current policy is generally to increase the percentage of separation and reduce residual waste. Specific targets for household waste (sector plan 1) have been set in the VANG - Household Waste Implementation Programme Review for the period up to 2025. For the autonomous development, it can be assumed that developments in collection and waste separation result in a decrease in the amount of residual waste. However, this may also mean that the residual fraction is made of less combustible material. This could mean that incineration is decreasing and recycling is increasing, but landfill of sorting residue is more prevalent than at present.

4. The alternatives

4.1 Overview of alternatives

The objective of the policy topic in this sub-report is to look at the (environmental) impact of replacing the current policy, where landfilling is not allowed, with a line that allows some degree of landfilling to expand its recycling potential. This contributes to the objective of more and better quality processing. In this way, it is possible to make a positive contribution to the further transition to the circular economy.

The following alternatives have been explored for this topic:

VI.a The zero alternative (the reference situation, see Chapter 3)

VI.b. The minimum standard for the above-mentioned waste streams provides a flow-specific flow of material that is limited to maximum landfill over the whole chain if the rest of the waste is (largely) treated in a higher-quality manner than incineration.

VI.c. For the above waste streams, the minimum standard specifies the same percentage, which may be dumped as a maximum, along the entire chain for any recycling-oriented processing.

VI.d. The request is sent by means of fares. Three different forms of implementation were examined: VI.d1 Steering with landfill tariffs via the Wbm tax

- VI.d2 Steering with low VAT on secondary raw materials
- VI.d3 Steering by additional burden on primary raw materials

VI.e. Sorting process requirements

VI.f. Combination of alternatives VI.d and VI.e

This section develops these alternatives and describes their effects. It should be noted that the alternatives are a heterogeneous group of waste streams and that the processing options can vary from one stream to another and therefore also their possible effects. Efforts have been made to describe the effects as generically as possible.

4.2 Alternative VI.b

The minimum standard for the waste streams of Sectoral Plans 1, 2, 9, 27 and 28 defines a specific proportion of material that can be landfilled throughout the entire chain if the rest of the waste is (largely) treated in a higher quality than incineration.

4.2.1 Alternative VI.b description

This alternative states that the minimum standard for the waste streams sets a percentage specific to each stream of material that may be dumped up to the maximum along the entire chain. This fraction can only be landfilled if the rest of the waste is treated (to a large extent) in a higher quality than incineration. In other words, if higher quality processing can be carried out, more landfills are also allowed, up to a maximum percentage.

In the past, several LCA-based studies have sought to establish a permissible criterion for a fraction to be landfilled. This eventually led to a proposal to

This includes a maximum of 10% landfill residue for residual household waste (small and bulky) and a maximum of 5% for street-cleaning waste and mixed construction and demolition waste[240].

This alternative also avoids any dumping. This is because more recycled secondary materials are produced, which reduces the need to produce primary materials. This also results in less mining waste due to a lower extraction rate of primary raw materials. In this way, two different wishes are fulfilled: the desire to recycle additional material and the desire not to dump additional ones. It should be noted, however, that national deposits are increasing and that the bulk of the dumping reduction due to the avoidance of primary materials is taking place abroad.

The control chart (see Figure 4.1 below) shows the process and where choices are made for this alternative, with an impact further down the chain. As can be seen from the process chart, the separation process can be chosen in this alternative: if further separation does not lead to a collapse of more than the maximum percentage allowed for the relevant sector plan, separation can be arranged. The green dotted line shows the scope of the alternative. The collection of waste (from the streams from Sector Plans 1, 2, 9, 27 and 28) results in a separation between a part that is to be incinerated, a part that is to be recycled and a unusable and non-combustible part that is to be landfilled. The recyclable stream is processed into recyclate, resulting in residual material that is partly incinerated again. The recyclate is used in a product until it is returned through a new cycle by means of waste collection. In this case, the total amount deposited after post-separation and the amount deposited after further processing must not exceed the maximum percentage of fraction to be deposited per sector plan.

240Development of occupation, dump site (SGS Search, 2019)

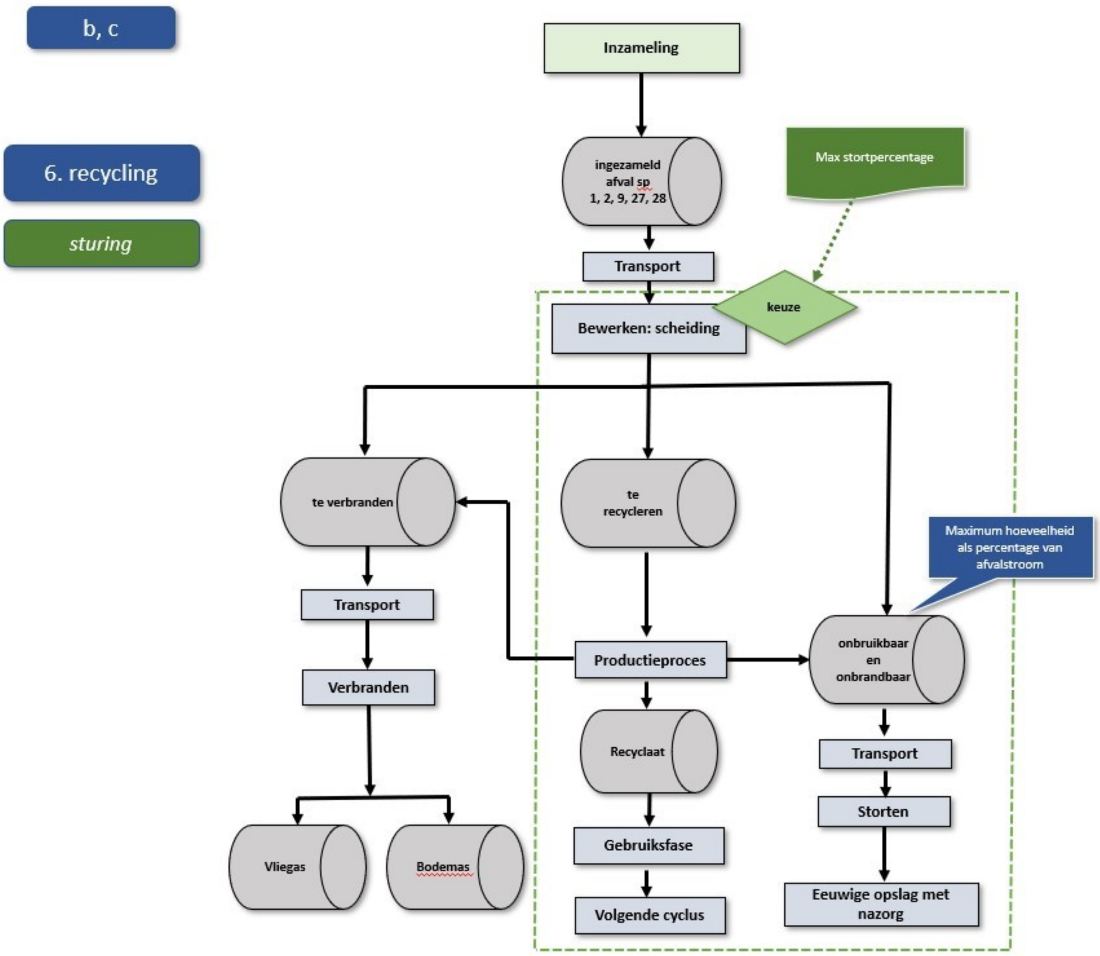

Figure 4.1 Process chart and management of alternative VI.b

4.2.2 Impacts of alternative VI.b

Circularity target range

Table 4.1. Circularity alternative VI.b target range assessment

	Efficient use of resources	Ratio of primary raw material – secondary material in products	+
		Ratio of renewable – non-renewable raw materials in products	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	++
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	0
		Share/percentage of substances moving to a lower level in the waste hierarchy	0
	Impact on the quality of secondary materials, including one Recycling cycle, if any	Applicability	0
		Returnability	0
		Workability	0

The **efficient use of resources** sub-goal has a positive impact. The alternative leads to an increase in the proportion of recycled materials. This may reduce the use of primary raw materials. This contributes to a more favourable ratio between primary raw material and secondary material in products. This has a positive (+) impact on the ***ratio of primary raw material – secondary material in products***. The measures included in this alternative have no impact on the ***ratio of renewable – non-renewable raw materials***. The impact on this criterion is therefore neutral (0).

Therefore, the score on the criteria of ***proportion/percentage of substances moving up a higher step in the waste hierarchy*** is very positive (++). The ***proportion/percentage of substances remaining in the same grade in the waste hierarchy, or in the same grade in the higher quality*** grade, is neutral (0). This is because the flows that are already recycled are not affected by this policy change. The ***proportion/percentage of substances moving to a lower level in the waste hierarchy*** is neutral (0). This alternative is based on the fact that the press balance is no longer paid in the total chain. However, this alternative may result in a slight increase in landfill in the Netherlands and the effect of avoided landfill abroad. These effects are mutually reinforcing. The material now processed through incineration plants leads to a limited amount of material collapse, which would be an even smaller stream. In addition, the increased use of recyclates reduces the use of primary raw materials, thus reducing the deposition in the production processes of primary raw materials, particularly abroad. It is expected that these considerations will result in a slight increase in collapse in the Netherlands. In conclusion, the sub-objective **to stimulate high-quality waste processing** scores positively (+).

The **impact on the quality of secondary materials** scores in a neutral way (0). The produced secondary material already produced in the baseline situation is unlikely to deteriorate in quality. The processes for sorting out these flows and processing them into recyclate will not change. What does change in this alternative is that the bulk of the material that is now incinerated, whether or not after an initial separation step, can still be separated later. This may entail a risk of processors sorting and processing as much as possible, producing lower quality secondary products as otherwise the non-combustible residual flows are too high. However, this is a risk that cannot be quantified. Therefore, the assessment against the criteria of ***applicability, returnability*** and ***workability*** is neutral (0)

Landfill and incineration target range

Table 4.2. Landfill and incineration alternative VI.b target range assessment

	Contribution to landfill/incineration restrictions	Landfill volume per year	0
		Amount of incineration per year	++

As indicated above, this alternative has limited potential to cause more deposits. The assessment on the indicator ***annual landfilling is thus*** neutral (0). The essence of the alternative is to reduce incineration. The assessment on the indicator ***annual amount of incineration is therefore*** very positive (++).

Environmental impact

Table 4.3. Assessment of environmental aspects of alternative VI.b

Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents per year)	+
	Energy use	Use of fossil fuels	0
		Energy use	0
	Water use	Water use	0
	Nitrogen emissions	Nox and NH3 emissions	+
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	+
		Contribution to reducing air quality exceedance of standards in soil and water	+

Although the landfill in the Netherlands is limited as a result of this alternative, a higher focus on waste separation, cleaning and recycling achieves lower input from primary raw materials. This also extends the length of materials in the chain. However, this requires an extension of separation and recycling processes. As this alternative also leads to a diversified process (from full incineration to a process with separation, recycling, incineration and landfill), transport through the collection and dissemination of materials is increasing. All these changes have an impact on ***greenhouse gas emissions***. Shifting from incineration to recycling generates a net gain in overall CO2 emissions. The reduction in CO_2 emissions resulting from, inter alia, the incineration of waste is offset by more and more intensive processing processes and transport. In addition, this alternative leads to a reduction in the use of primary raw materials and thus in the CO2 emissions from the extraction and processing of primary raw materials. It should be noted, however, that an important part of this impact has increased abroad. These effects are difficult to quantify at this level, but several studies have shown that, on balance, a transition from incineration to recycling has a positive impact on the target of reducing **greenhouse gas emissions** (+).

More intensive processing and transport operations require more use of fossil fuels. On the other hand, the reduced use of primary raw materials (and therefore less use in the extraction, transport and processing of primary raw materials) leads to lower use of fossil fuels. These effects are mutually reinforcing, assessing the ***use of fossil fuels*** as neutral (0).

Compared to the baseline situation, the amount of waste to be incinerated decreases and the amount or complexity of recycling processes increases. The effect is that there is a shift from one party to another.

low-energy processing (incineration) to energy-requesting processing (recycling). The more and more intensive processing processes often require higher water consumption than combustion. Another effect is that due to the reduced use of primary raw materials, the energy consumption of primary raw materials in extraction, transport and processing is reduced. How these effects relate to each other is difficult to quantify. Therefore, the starting point is that these effects cancel each other and that the balance for ***energy use*** and also ***water use*** remains the same. This results in a neutral score (0) for both indicators. However, it should be noted that the impact of reduced use of primary raw materials is mainly felt abroad.

In principle, the same applies to the effects on greenhouse gases as to ***nitrogen (NOx and NH3) emissions.*** Reduced waste incineration reduces nitrogen emissions. On the other hand, more and more intensive processing techniques and transport lead to an increase in nitrogen emissions, but this is outweighed by the reduced emissions from combustion. On balance, this alternative scores positive (+) on this criterion.

The reference situation is waste incineration, with risks such as soil contamination, air pollution, discharges and inefficient management of waste. The alternative reduces combustion and therefore risks to humans and the environment from the spread of harmful substances. Although landfill in the Netherlands is increasing very slightly, the positive impact of the decline in incineration on people and the environment will be greater. The ***distribution of pollutants to soil, water or the atmosphere*** and ***contribution to reducing the exceedance of standards soil, water and air quality*** score positively on this alternative (+).

Realisability

Changing a minimum standard affects several parties in the chain. The main stakeholders in this topic are recyclers, landfills, waste incineration plants, sorters and permit providers. For the parties to use the possibility of sorting further than this, the parties may need to adapt part of their processes.

Table 4.4. Assessment of feasibility of alternative VI.b

Realisability	Practicability and enforceability (government)	Legal enforceability	0
		Practical enforceability	-
		Financial enforceability	0
		Indirect and/or long term costs	0
	Feasibility and compliance (market)	Practicability practical	0
		Compliance with practical	0
		Economic feasibility	0

Realisability	Practicability and enforceability (government)	Legal enforceability	0
		Practical enforceability	-
		Financial enforceability	0
		Indirect and/or long term costs	0
	Feasibility and enforceability (market)	Practicability practical	0
		Compliance with practical	0
		Economic feasibility	0

Government
This alternative is feasible for the administration. The permits must be updated according to the different maximum percentages in the minimum standard of the sector plans. The BSSA should also be adapted. This is legally possible and feasible. The development of this alternative does not require any major additional effort for the authorities in the form of rule amendments. However, specifying the percentages of maximum fraction to be deposited per stream requires an effort from the authorities. However, this effort has no impact on the criteria of ***legal viability*** and ***financial enforceability.*** Therefore, the alternative scores (0) on these criteria.
As regards practical compliance, this alternative is less enforceable. In this alternative, the need for documentation to be prepared by processors to facilitate the necessary checks by enforcers is high. Additional deployment is required compared to the current administration. For this reason, ***practical enforceability*** is negatively scored (-).
It also scores neutrally on the criterion of ***indirect and/or long (more) term costs*** (0), it is difficult to predict whether this alternative will have positive effects on society's vision.

Market
For the market, several aspects play a role in the assessment of feasibility. Firstly, processors wishing to benefit from the extended landfill options for a sorting residue (in particular recyclers and landfills) will need to be able to cope with the increase in capacity. This will require an effort from the processors, but if the business case is positive, the processors will make use of this option. It is not expected that the increase in landfill will be so large that it will be a problem with available landfill capacity. The required sorting techniques are available and can be applied. However, it will be necessary to scale up in order to also achieve the necessary processing capacity. However, the use of differentiated percentages is difficult. For example, residual household waste and residual waste from businesses is collected as separate streams, but processed as one large stream. Such practical considerations should be taken into account in the regulations. Solutions could be devised, such as working with average people. All these considerations will be taken into account by the processors when they want to make use of the possibility of recycling and landfilling more. However, this alternative does not require anything. This means that processors can also maintain the status quo. As there is nothing in this respect required, the criterion of ***practicality*** scores in a neutral (0) alternative.

This alternative requires good administration to keep the material to be landfilled for the entire flows in order to determine whether the maximum percentage is exceeded. With this alternative process becoming more extensive and complex, landfill monitoring may become more complex. Processors throughout the chain will need to intensify their cooperation. The administrative burden involved in this commitment could have a negative impact. However, again, processors will only use the landfill option if a positive business case is established

hangs. Here too, processors can maintain the status quo. As there is nothing in this respect required, the criterion of ***practical compliance*** is also neutral (0).

This alternative has advantages for the market, as more is recycled. However, this alternative requires additional investments by processors in capacity. The extent to which the processing is increased depends on the extent to which the possibilities offered by this alternative are favourable to the processors in terms of cost-benefit analysis. This depends on the amount of costs of additional processing step(s), the revenue of the separated fraction to be recycled and the cost of landfilling the residual fraction. In the case of waste to be incinerated, the costs to be paid to the incineration plant may still be relevant here. Allowing a (limited amount of) deposit can contribute to a better business case for processors by allowing more leeway to optimally divide a given waste stream into sub-streams of incineration (energy-containing material but low recycling potential), recycling (service deposit material and market-oriented material) and landfilling (non-combustible, non-recyclable). While there are theoretical opportunities for a viable business case, the extent to which the market will be able to do so is questionable. The assessment on the criterion of ***economic feasibility*** is therefore neutral (0).

4.3 Alternative VI.c

For the waste streams of Sector Plans 1, 2, 9, 27 and 28, the minimum standard includes the same fixed percentage that may be maximally dumped throughout the entire chain for recycling-oriented processing.

4.3.1 Alternative VI.c description

This alternative is essentially the same as the previous one. A maximum landfilling rate is allowed if processing is aimed at recycling. The difference lies in the fact that a fixed percentage is chosen to be paid throughout the entire chain, which is the same for all sector plans (1, 2, 9, 27 and 28). The rationale behind this is that at the time of LAP1, an approach was taken that landfill and recycling together could, in mass, generate as much landfill as integral incineration. This means that it is neither processed nor separated before it is incinerated. The residue to be landfilled after incineration resulted in a maximum limit of 5% for the landfilling of a sorting residue. This 5 % can now be refined because it is now possible to dump 15 % of waste incinerator bottom ash. This would allow some sort of sorting residue to be dumped, roughly at a maximum of 9 or 10%[241]. It should be noted that an exemption must always be applied for in the event of a deposit, as a result of the BSSA (Art. (23a) and (b) are subject to a dumping ban[7].

The alternative therefore assumes that all five sector plans will have to use the same landfill sorting residue rate. The current BSSA will also need to be translated into this alternative. As shown in Figure 4.2 below, the choice is made when separating the waste.

241Reaction note on views –NRD for the purposes of the Environmental Impact Assessment for the Circular Materials Plan [7] wetten.nl - Regeling - Besluit stortplaatsen en stortverboden afvalstoffen - BWBR0009094 (overheid.nl)

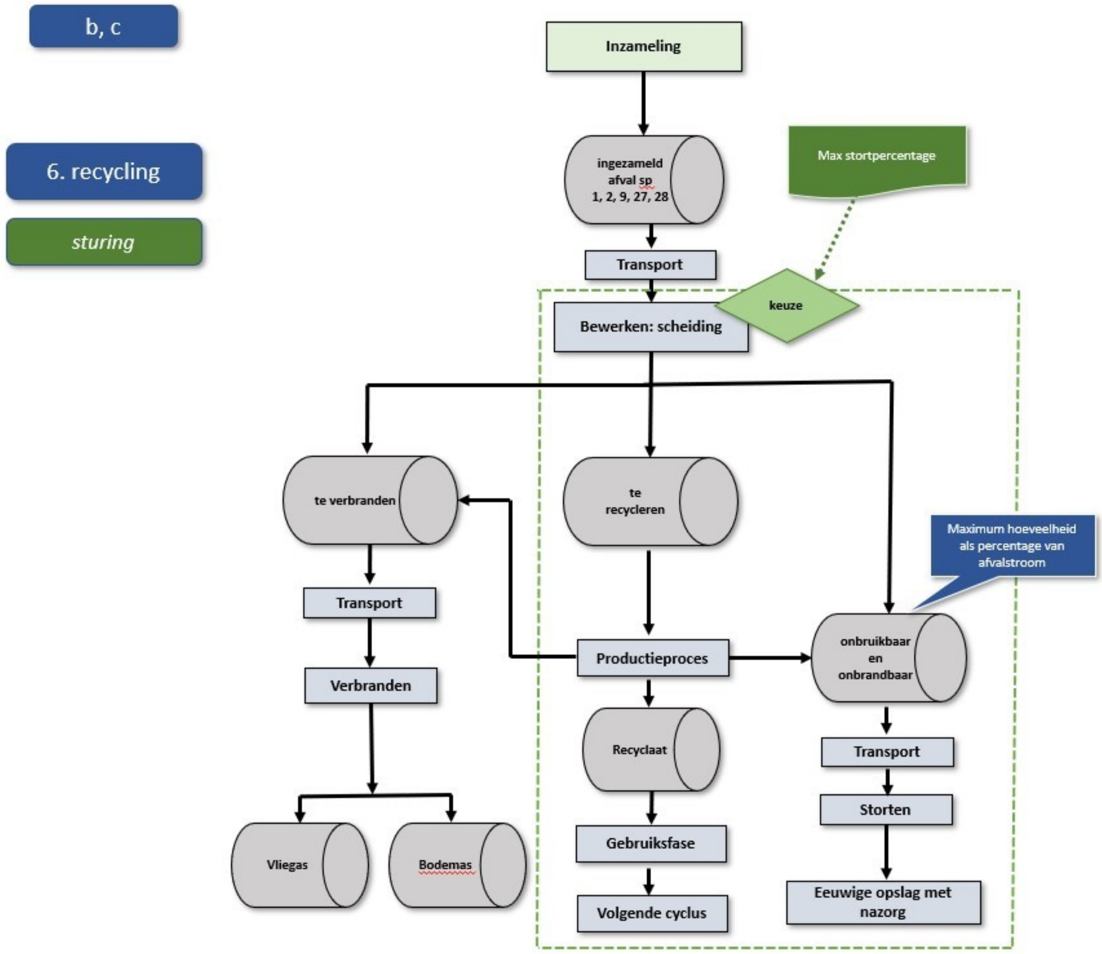

Figure 4.2. Process schedule Alternative VI.c

4.3.2 Impacts of alternative VI.c

Circularity target range

Table 4.5. Circularity target assessment alternative VI.c

	Efficient use of resources	Ratio of primary raw material – secondary material in products	+
		Ratio of renewable – non-renewable raw materials in products	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	+
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	0
		Share/percentage of substances moving to a lower level in the waste hierarchy	0
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	0
		Returnability	0
		Workability	0

The target achievement is broadly similar to the assessment of Alternative VI.b. here again, the sub-goal **efficient use of raw materials** scores positively. The alternative leads to an increase in the proportion of recycled materials. This may reduce the use of primary raw materials. This will help to increase the incentives

This is between primary raw material and secondary material in products. This has a positive (+) impact on the ***ratio of primary raw material – secondary material in products***. The measures included in this alternative have no impact on the ***ratio of renewable – non-renewable raw materials***. The impact on this criterion is therefore neutral (0).

The score in relation to the criteria ***share/percentage of substances moving up the waste hierarchy*** is positive (+). This is slightly less positive than for Alternative VI.b, as a uniform rate may provide less specific incentives for higher-quality treatment per waste stream. Each waste stream has its specific properties and the optimal form of treatment associated with it. A uniform, unspecified percentage cannot be the optimal value for flows. The ***proportion/percentage of substances remaining in the same grade in the waste hierarchy, or in the same grade in the higher quality*** grade, is neutral (0). This is because the flows that are already recycled are not affected by this policy change. The ***proportion/percentage of substances moving to a lower level in the waste hierarchy*** is neutral (0). As with Alternative VI.b, here landfill is also allowed to a limited extent. This would mean that some of the material would also be processed at a lower grade. However, the difference compared with alternative VI.b is that, by handling a uniform percentage of material to be deposited, the landfill possibilities for a stream are higher or lower than if a specific percentage were to be applied as in alternative VI.b. As this concerns both higher and lower landfill possibilities, it is assumed that on balance this effect will be virtually the same.
At the same time, as in Alternative VI.b, there is an avoided landfill in this alternative. The material now processed through incineration plants leads to a limited amount of material collapse, which would be an even smaller stream. In addition, the increased use of recyclates reduces the use of primary raw materials, thus reducing the collapse of the production processes of primary raw materials, especially abroad. It is expected that these considerations will result in a slight increase in collapse in the Netherlands. The score on the criterion ***Share/percentage of substances moving to a lower level in the waste hierarchy*** is therefore neutral (0).

The **impact on the quality of secondary materials** scores in a neutral way (0). The produced secondary material produced in the baseline situation is unlikely to deteriorate in quality. The processes for sorting out these flows and processing them into recyclate will not change. What does change in this alternative is that the bulk of the material that is now incinerated, whether or not after an initial separation step, can still be separated later. Processors may wish to make use of the possibility of obtaining the maximum landfill percentages. This leads to the risk that processors will produce lower quality secondary products as otherwise the residual flows will be too high. However, it is difficult to estimate whether this effect will be achieved in practice. Therefore, this is not taken into account in the assessment. It assesses the alternative to the criteria of ***applicability, returnability*** and ***workability*** of those secondary products in a neutral manner (0).

Landfill and incineration target range

Table 4.61. Landfill and incineration alternative VI.c target range assessment

	Contribution to landfill/incineration restrictions	Landfill volume per year	0
		Amount of incineration per year	++

As indicated above, this alternative leads to a limited amount of collapse. The assessment on the ***annual landfill quantity*** indicator is therefore neutral (0). The essence of the alternative is to reduce incineration. The assessment against the criterion of ***annual amount of incineration*** is therefore very positive (++).

Environmental impact

Table 4.7. Assessment of environmental impacts of alternative VI.c

Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents per year)	+
	Energy use	Use of fossil fuels	0
		Energy use	0
	Water use	Water use	0
	Nitrogen emissions	Nox and NH3 emissions	+
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+

The environmental effects of Alternative VI.c are also almost the same as those of Alternative VI.b. The effect that a uniform rate on a single stream might not encourage more processing led to a slightly different 'target-range' assessment. However, the impact is so small that environmental impacts do not lead to a different assessment from alternative VI.b.

Although the landfill in the Netherlands is limited as a result of this alternative, a higher focus on waste separation, cleaning and recycling achieves lower input from primary raw materials. This also extends the length of materials in the chain. However, this requires an extension of separation and recycling processes. As this alternative also leads to a diversified process (from incineration to a process with separation, recycling, incineration and landfill), transport is increasing through the collection and dissemination of materials. All these changes have an impact on ***greenhouse gas emissions***. Shifting from incineration to recycling generates a net profit for CO_2 emissions. The reduction in CO_2 emissions resulting from, inter alia, the incineration of waste is offset by more and more intensive processing processes and transport. In addition, this alternative leads to a reduction in the use of primary raw materials and thus in the CO_2 emissions from the extraction and processing of primary raw materials (with a significant part of this effect rising abroad). These effects are difficult to quantify at this level, but several studies have shown that, on balance, a transition from incineration to recycling has a positive impact on the greenhouse gas emission reduction target (+).

More intensive processing and transport operations require more use of fossil fuels. On the other hand, the reduced use of primary raw materials (and therefore less use in the extraction, transport and processing of primary raw materials) leads to lower use of fossil fuels. These effects are mutually reinforcing, assessing the ***use of fossil fuels*** as neutral (0).

Compared to the reference situation, the amount of waste to be incinerated is decreasing and the (intensity of) recycling processes is increasing. This has the effect of shifting from energy-poor processing (incineration) to energy-demanding processing (recycling). The more intensive processing operations also require increased water consumption. Another effect is that due to the reduced use of primary raw materials, the energy consumption of primary raw materials in extraction, transport and processing is reduced. Therefore, the starting point is that these effects cancel each other and that the balance for ***energy use*** and also ***water use*** remains the same. This results in a neutral score (0) for both indicators. However, it should be noted that the impact of reduced use of primary raw materials is mainly felt abroad.

In principle, the same effects on greenhouse gases apply to ***nitrogen (NOx and NH3) emissions.*** Reduced waste incineration reduces nitrogen emissions. On the other hand, more and more intensive processing techniques and transport lead to an increase in nitrogen emissions, but this is outweighed by the reduced emissions from combustion. On balance, this alternative scores positive (+).

The reference situation is waste incineration, with risks such as soil contamination, air pollution, discharges and inefficient management of waste. The alternative reduces combustion and therefore risks to humans and the environment from the spread of harmful substances. Although landfill in the Netherlands is increasing very slightly, the impact on people and the environment is positive due to the decline in incineration. The ***distribution of pollutants to soil, water or the atmosphere*** and ***contribution to reducing the exceedance of standards soil, water and air quality*** score positively on this alternative (+).

Realisability

Changing a minimum standard affects several parties in the chain. The main stakeholders in this area are recyclers, other processors and permit-granting companies. For the parties to use the option to sort further than this, the parties may have to adapt part of their processes to comply with a new minimum standard. In addition, enforcement is an important factor that ensures the viability of the policy.

Table 4.8. Assessment of realisability of alternative VI.c

Realisability	Feasibility and enforceability (government)	Legal enforceability	0
		Practical enforceability	0
		Financial enforceability	0
		Indirect and/or long term costs	0
	Feasibility and enforceability (market)	Practicability practical	0
		Compliance with practical	0
		Economic feasibility	0

Government

This alternative is feasible for the administration. This alternative would also require changes to the permits and to the BSSA. This is legally possible and feasible. The development of this alternative does not require any major additional effort on the part of the administration. However, specifying the percentages of maximum landfilling fraction per stream of effort required by the public authorities. As this is a uniform percentage, this effort is less significant than in alternative VI.b. This is because setting a specific percentage per stream requires an additional effort. However, this has no impact on the criteria of ***legal practicability*** and ***financial enforceability.*** Therefore, the alternative scores (0) on these criteria.
As regards practical compliance, this alternative is less enforceable. In this alternative, the need for documentation to be prepared by processors to facilitate the necessary checks by enforcers is high. It also scores neutrally on the criterion of ***indirect and/or long (more) term costs*** (0), it is difficult to predict whether this alternative will have positive effects on society's vision.

Market
For the market, several aspects play a role in the assessment of feasibility. Firstly, processors wishing to benefit from the extended landfill options for a sorting residue (in particular recyclers and landfills) will need to be able to cope with the increase in capacity. This will require an effort on the part of the processors, but if there is a positive business case, the processors will certainly use it and will not have an impact on the criterion of practicality. It is not expected that the increase in landfill will be so large that it will be a problem with available landfill capacity. The required sorting techniques are available and can be applied. However, it will be necessary to scale up to the required capacity. However, processors can continue to do what they are doing now, as nothing is required. Therefore, the ***practicality*** criterion is scored neutral (0).

This alternative requires good administration to keep the material to be landfilled for the entire flows in order to determine whether the maximum percentage is exceeded. With this alternative process becoming more extensive and complex, landfill monitoring may become more complex. Processors throughout the chain will need to intensify their cooperation. The administrative burden involved in this commitment could have a negative impact. However, again, processors will only use the landfill possibility if a positive business case is attached to it. Here too, processors can maintain the status quo. As there is nothing in this respect required, the criterion of ***practical compliance*** is also neutral (0).

This alternative has advantages for the market, as more is recycled. However, this alternative requires additional investments by processors in capacity. The extent to which the processing is increased depends on the extent to which the possibilities offered by this alternative are favourable to the processors in terms of cost-benefit analysis.

This depends on the amount of costs of additional processing step(s), the revenue of the separated fraction to be recycled and the cost of landfilling the residual fraction. In the case of waste to be incinerated, the costs to be paid to the incineration plant may still be relevant here. Allowing a (limited amount of) deposit can contribute to a better business case for processors by allowing more leeway to optimally divide a given waste stream into sub-streams of incineration (energy-containing material but low recycling potential), recycling (service deposit material and market-oriented material) and landfilling (non-combustible, non-recyclable). While there are theoretical opportunities for a viable business case, the extent to which the market will be able to do so is questionable. The assessment on the criterion of ***economic feasibility*** is therefore neutral (0).

4.4 Alternative VI.d1: Rates are set through the use of the Wbm

4.4.1 Alternative VI.d1 description

The first potential tool is the implementation of the Environmental Taxes Act (Wbm)[242]. This would allow the market to be dumped, but would discourage this as much as possible through a landfill tax. The processor will therefore decide, based on the business case for recyclate, to further separate, burn less, recycle more and landfill more. The objective of this sub-alternative is to encourage landfill taxation to recycle the processor as far technically as possible while the high landfill tax to make the dumping of too much residue unattractive. This is shown in Figure 4.3. The diagram in this figure applies to all variants of Alternative VI.d.

The steering chart below shows the process and where the choices for this alternative are made, with an impact further down the chain. As shown in the process chart, the choice of incineration or recycling/landfill/incineration has to be made in this alternative in the separation process: the choice of incineration or recycling/landfilling/incineration affects the cost sheets later in the process, when the respective form of processing takes place. Waste collection (from sector plans 1, 2, 9, 27 and 28) results in the separation of a part to be recycled and a part to be incinerated or disposed of. The recyclable stream is processed into recyclate, and the residue is incinerated. The recyclate is used in a product until it is used again through a new cycle by means of waste collection.

242Reaction note on views –NRD for Environmental Impact Assessment for the Circular Materials Plan

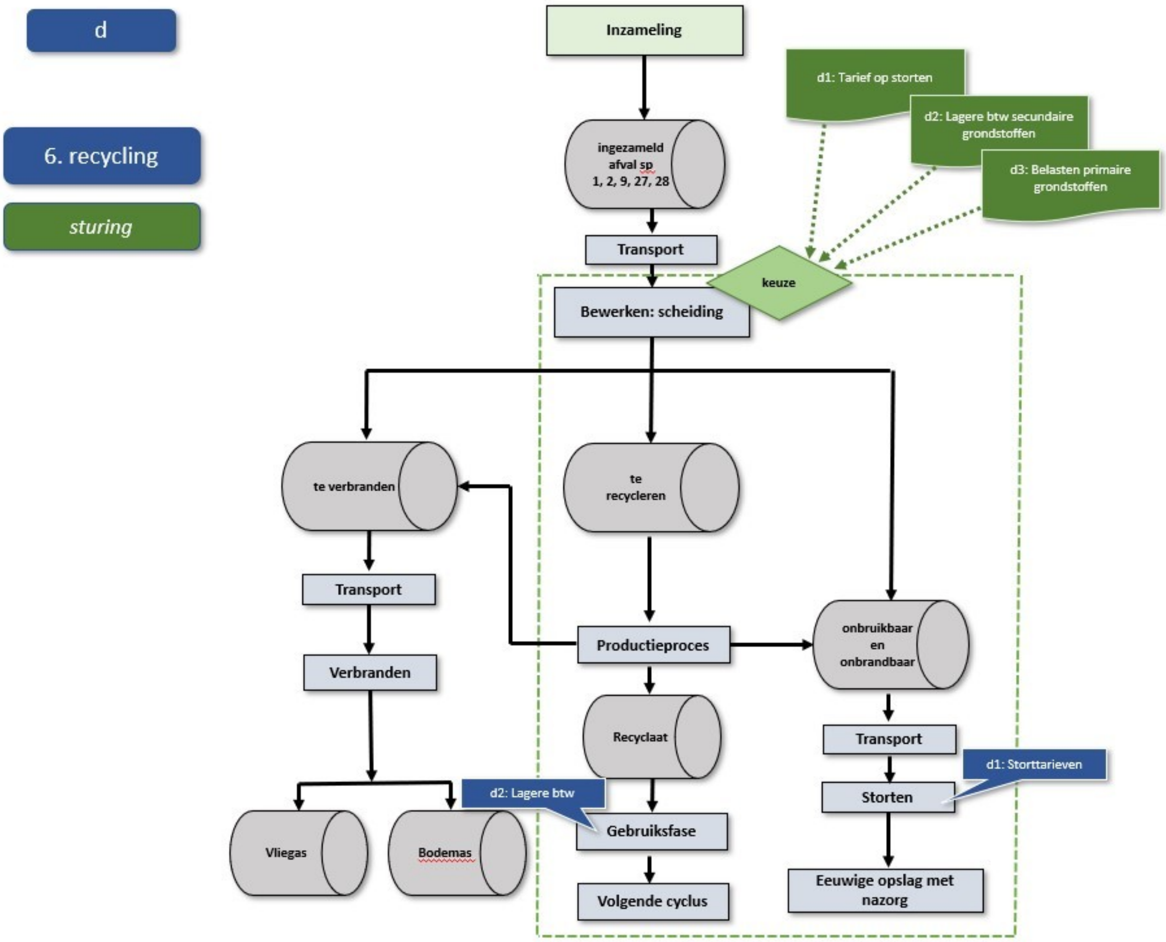

Figure 4.3. Process schedule alternative VI.d1

One point of attention here is that, when setting the tariffs, the government must strike a balance between minimising landfilling rates, without a strong reduction in recyclate quality due to efforts to minimise landfilling. Waste processors will also need to consider recycling more and be able to charge more money for quality secondary material. Or to reduce sorting and allow more contamination in the recyclate. This would allow the processor to pay the high landfill tax for less residue, but to charge less money for the more contaminated secondary material. One point to consider is that landfill prices will increase in the future due to limited capacity. Increasing the Wbm will put you at risk of double increases, and recycling will depress the market.

4.4.2 Impacts of alternative VI.d1

Circularity target range

Table 4.9. Circularity alternative VI.d1 target range assessment

	Efficient use of resources	Ratio of primary raw material – secondary material in products	+
		Ratio of renewable – non-renewable raw materials in products	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	++
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	0
		Share/percentage of substances moving to a lower level in the waste hierarchy	0
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	0
		Returnability	0
		Workability	0

In the context of landfill taxation, it is difficult to determine in advance whether the financial incentive will lead to the desired optimum. This optimum here would be for processors to recycle the optimum quantity and only to dump and/or burn the minimum. This is in contrast to the current situation where a collapse is not possible. This target is assessed on the basis that the price actually reaches this optimum. Feasibility and practicability, and hence effectiveness, are assessed in the theme 'feasibility'.

The **efficient use of resources** sub-goal has a positive impact. The alternative leads to an increase in the proportion of recycled materials. This may reduce the use of primary raw materials. This contributes to a more favourable ratio between primary raw material and secondary material in products. This has a positive (+) impact on the ***ratio of primary raw material – secondary material in products***. The measures included in this alternative have no impact on the ***ratio of renewable – non-renewable raw materials***. The impact on this criterion is therefore neutral (0).

As this alternative will lead to more recycling and less incineration the score regarding the criterion ***share/percentage of substances moving to a higher level in the waste hierarchy*** is very positive (++). The ***proportion/percentage of substances remaining in the same grade in the waste hierarchy, or in the same grade in the higher quality*** grade, is neutral (0). This is because the flows that are already recycled are not affected by this policy change. Assessing the criterion of the ***proportion/percentage of substances moving to a lower level in the waste hierarchy*** involves several developments. Since the alternative allows for a limited landfilling rate — more than in the baseline situation — it can be expected that it will also be used, increasing the landfill volume. However, it can be assumed that the rate of increase in landfilling will be limited by controlling the landfill price. This would mean that some of the material would also be processed at a lower grade. At the same time, however, there has been avoided dumping. The material now processed through incineration plants leads to a limited amount of material collapse, which would be an even smaller stream. In addition, the increased use of recyclates reduces the use of primary raw materials, thus reducing the collapse of the production processes of primary raw materials, especially abroad. In addition, the level of the landfill price may have an effect on the amount of the deposit. If the rate is too high, the commitment to recycling will increase by - as indicated above risk of a lower quality of the secondary product. This leads to more collapse over several cycles. If the rate is too low, the incentive to further process will be insufficient and there is a risk that more will eventually be paid. It therefore presents a complex set of developments affecting the assessment. Overall, this alternative is expected to result in a slight increase in collapse in the Netherlands. The assessment is neutral (0) with regard to the criterion of ***proportion/percentage of substances moving to a lower level in the waste hierarchy***, as the impact is expected to be limited.

The **impact on the quality of secondary materials** scores in a neutral way (0). As indicated above, the starting point is that there is an optimum for the landfill price. The produced secondary material already produced in the baseline situation is unlikely to deteriorate in quality. The processes for sorting out these flows and processing them into recyclate will not change. The starting point is that there is an optimum for the landfill price, so that there is no risk that, due to excessive landfill prices, maximum use will be made of processing with lower quality secondary products. The alternative therefore leads to more secondary products, but has no direct impact on their quality (positive or negative).
However, one risk in this alternative is that there may be incentives to go through very far in order to reduce the amount of residue to be landfilled, which in turn can result in a negative impact on the quality of the recyclate. It is difficult to estimate whether this risk will actually materialise. Therefore, this risk was not considered in the assessment. The effects for the criteria ***applicability, returnability*** and ***workability*** are therefore assessed as neutral (0).

Landfill and incineration target range

Table 4.10. Landfill and incineration alternative VI.d1 target range assessment

	Contribution to landfill/incineration restrictions	Landfill volume per year	0
		Amount of incineration per year	++

As indicated above, this alternative is characterised by a complex set of factors influencing the landfill, but the overall assessment is that there will be a limited amount of tipping. The assessment on the ***annual landfill quantity*** indicator is neutral (0), as the impact is expected to be limited. The essence of the alternative is to reduce incineration. The assessment on the indicator ***annual amount of incineration is therefore*** very positive (++).

Environmental impact

Table 4.11. Assessment of environmental impacts, alternative VI.d1

Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents per year)	+
	Energy use	Use of fossil fuels	0
		Energy use	0
	Water use	Water use	0
	Nitrogen emissions	Nox and NH3 emissions	+
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of contaminants into soil, (ground) water or atmosphere	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+

On balance, this alternative leads to more recycling and a lower level of incineration. Landfill volumes will increase slightly. These developments determine environmental impacts.

Although the landfill in the Netherlands is limited as a result of this alternative, a higher focus on waste separation, cleaning and recycling achieves lower input from primary raw materials. This also extends the length of materials in the chain. However, this requires an extension of separation and recycling processes. As this alternative also leads to a diversified process (from incineration to a process with separation, recycling, incineration and landfill), transport is increasing through the collection and dissemination of materials. All these changes have an impact on ***greenhouse gas emissions***. Shifting from incineration to recycling generates a net gain in overall CO2 emissions. The reduction in CO2 emissions resulting from, inter alia, the incineration of waste is offset by more and more intensive processing processes and transport. In addition, this alternative leads to a reduction in the use of primary raw materials and thus in the CO2 emissions from the extraction and processing of primary raw materials (with a significant part of this effect taking up abroad). These effects are difficult to quantify at this level, but several studies have shown that, on balance, a transition from incineration to recycling has a positive impact on the target of reducing **greenhouse gas emissions** (+).

More intensive processing and transport operations require a greater ***use of fossil fuels***. On the other hand, the reduced use of primary raw materials (and therefore less use in the extraction, transport and processing of primary raw materials) leads to lower use of fossil fuels. These effects are difficult to quantify, therefore the starting point here is that they cancel each other, which assesses the criterion of ***use of fossil fuels*** as neutral (0).

Compared to the reference situation, the amount of waste to be incinerated is decreasing and the (intensity of) recycling processes is increasing. This has the effect of shifting from energy-poor processing (incineration) to energy-demanding processing (recycling). The more and more intensive processing processes also require greater ***water consumption***. Another effect is that due to the reduced use of primary raw materials, the energy consumption of primary raw materials in extraction, transport and processing is reduced. Therefore, the starting point is that these effects cancel each other and that the balance for ***energy use*** and also ***water use*** remains the same. This results in a neutral score (0) for both indicators. However, it should be noted that the impact of reduced use of primary raw materials is mainly felt abroad.

In principle, the effects on greenhouse gases are also **nitrogen emissions** (NOx and NH3). Reduced waste incineration reduces nitrogen emissions. On the other hand, more and more intensive processing techniques and transport lead to an increase in nitrogen emissions, but this is outweighed by the reduced emissions from combustion. On balance, this alternative scores positive (+).

The reference situation is waste incineration, with risks such as soil contamination, air pollution, discharges and inefficient management of waste. The alternative reduces combustion and therefore **risks to humans and the environment from the spread of harmful substances**. Although landfill in the Netherlands is increasing very slightly, the impact on people and the environment is positive due to the decline in incineration. The ***distribution of pollutants to soil, water or the atmosphere*** and ***contribution to reducing the exceedance of standards soil, water and air quality score positively on these indicators*** (+).

Realisability

Table 4.12. Assessment of feasibility of alternative VI.d1

Realisability	Practicability and enforceability (government)	Legal enforceability	-
		Practical enforceability	-
		Financial enforceability	0
		Indirect and/or long term costs	0
	Feasibility and enforceability	Practicability practical	0

(market)	Compliance with practical	0
	Economic feasibility	0

Government

There are several aspects to the feasibility of implementing the strategy. Within the Wbm price, there will be a need to differentiate between landfilling and incineration. The Wbm has the potential to apply the landfill tax rate. There is no need to develop a new toolbox. However, there are practical implications as a result of this legal adjustment. In order to effectively adjust the rate structure, coordination between relevant ministries and with the Tax Administration is necessary. This makes the implementation of this alternative complex for the administration. Therefore, the criterion of ***legal practicability*** is assessed as negative (-).
Landfill operators will have to pay more landfill tax and the government will collect it. The complexity of enforceability is practically higher. Public authorities should be able to verify that the landfill is lawful and that the residue to be landfilled is the result of increased recycling. This will require additional effort. Therefore, ***practical compliance*** scores negative (-). Financially, however, this can be maintained. Operational costs will not be significant and it will generate tax revenue. Therefore, there is no impact on ***financial enforceability*** compared to the current situation (0). It also scores neutrally on the criterion of ***indirect and/or long (more) term costs*** (0), it is difficult to predict whether this alternative will have positive effects on society's vision.

Market
This alternative is practically feasible for the economic operators and has no significant impact compared to the baseline situation. This alternative is also ***practicable*** and scores in neutral (0). Landfill operators will have to pay the landfill tax and pass it on to the landfill sorting residue provider. The market is ***practical compliance***, with a neutral score (0). If a landfill is to be used, the waste processor will pay landfill tax at the landfill. Recycling may become more expensive, as landfill tax must be paid on the inert material that is released during recycling. Thus, a good balance sheet point should be found for the amount of the landfill tax, to ensure that recycling remains the most attractive choice rather than the current preference for incineration due to the benefits generated by energy generation, while the rate should not be so high as to encourage processors to process more contaminated fractions into the recyclate, thereby limiting the dumping of residues. Of course, the fact that cleaner recyclate in general also generates more than less clean recyclate for market parties also plays a role. There will therefore be no difference in ***economic feasibility*** for the market and this indicator scores in a neutral way (0). In this alternative too, the waste processor may choose to follow the current procedure. There is no clear incentive to innovate/invest in processing capacity, this alternative is not specific to the business case of further filtering.

4.5 Alternative VI.d2: Sent via prices via the use of low VAT on secondary raw materials

4.5.1 Alternative VI.d2 description

This implementation method uses a different pricing approach, namely not taxing the deposit of residue, but instead encouraging the use of recyclate. Alternative VI.d2 suggests a low level of VAT on secondary raw materials for this purpose. This encourages the market for secondary raw materials. Based on the business case for recyclate, the processor will decide to further separate, burn less, recycle more and landfill more. This is shown in Figure 4.4. The diagram in this figure applies to all variants of Alternative VI.d.

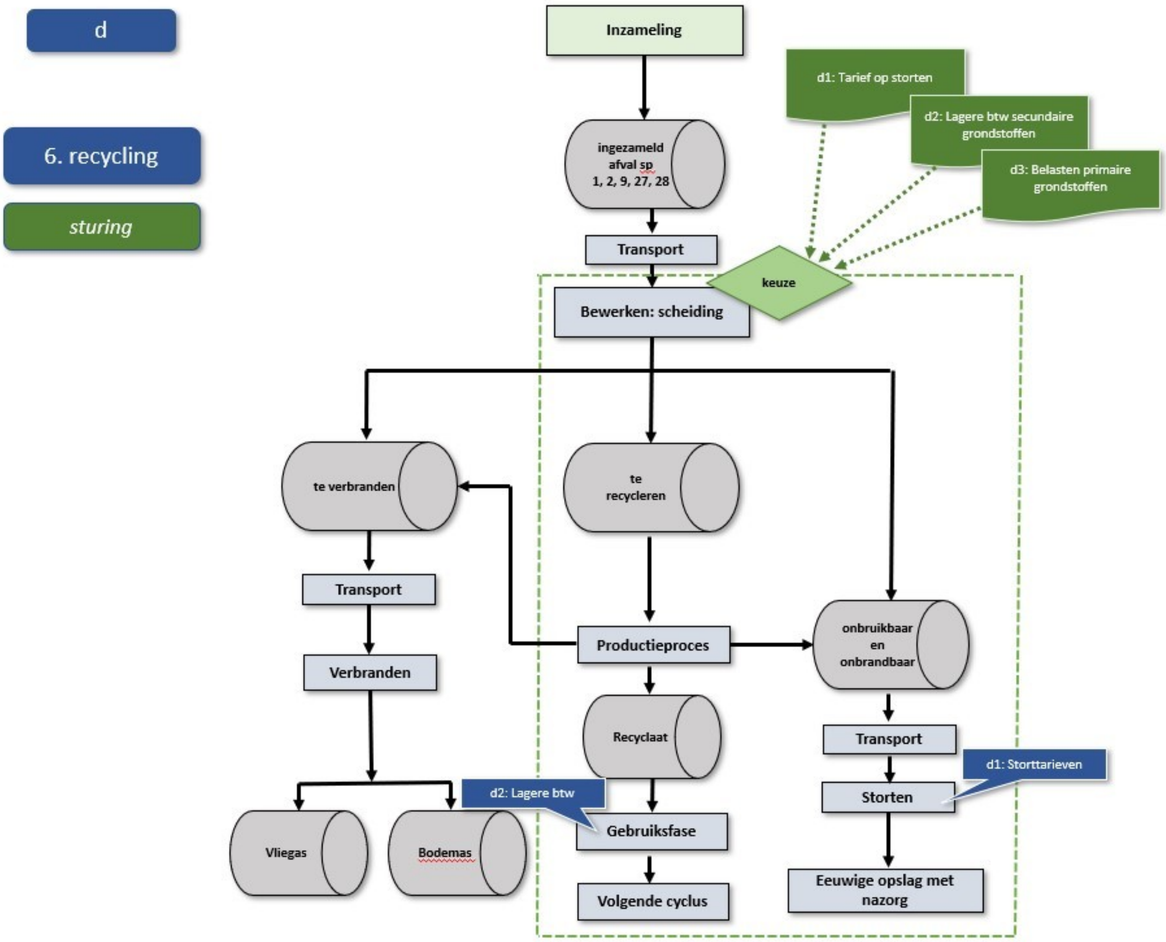

Figure 4.4. Process schedule Alternative VI.d2

The steering diagram above shows the process and where the choices for this alternative are made, with an impact further down the chain. As shown in the process chart, the choice of incineration or recycling/landfill/incineration has to be made in this alternative in the separation process: the choice of incineration or recycling/landfilling/incineration affects the cost sheets later in the process, when the respective form of processing takes place. The collection of waste (from sector plans 1, 2, 9, 27 and 28) results in the separation of a part that is to be incinerated, a part that is to be recycled and a part that is unusable and non-combustible (for landfill). The recyclable stream is processed into recyclate and a residue to be incinerated. The recyclate is used in a product until it is used again through a new cycle by means of waste collection. This recyclate will have a lower VAT than the same product made from primary raw materials. This makes the use of recyclate attractive and the market

will grow as a result. This makes it attractive for waste operators to choose to recycle more from the front and should, of course, minimise the landfilling of recyclable materials.

4.5.2 Impacts of alternative VI.d2

Circularity target range

Table 4.13. Circularity alternative VI.d2 target range assessment

	Efficient use of resources	Ratio of primary raw material – secondary material in products	+
		Ratio of renewable – non-renewable raw materials in products	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	++
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	0
		Share/percentage of substances moving to a lower level in the waste hierarchy	-
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	0
		Returnability	0
		Workability	0

With lower taxation of secondary raw materials, it is difficult to determine in advance whether the financial incentive will lead to the desired optimum. This optimum here would be that processors will recycle the optimum quantity and only dump and/or burn the minimum. This is in contrast to the current situation where there are no more favourable prices for secondary raw materials and therefore more primary raw materials may be used and less secondary raw materials may be used. This target is assessed on the basis that the price actually reaches this optimum. Feasibility and practicability, and hence effectiveness, are assessed in the theme 'feasibility'.

The **efficient use of resources** sub-goal has a positive impact. The alternative leads to an increase in the proportion of recycled materials. This may reduce the use of primary raw materials. This contributes to a more favourable ratio between primary raw material and secondary material in products. This has a positive (+) impact on the ***ratio of primary raw material – secondary material in products***. The measures included in this alternative have no impact on the ***ratio of renewable – non-renewable raw materials***. The impact on this criterion is therefore neutral (0).

The ***share/percentage of substances moving up the waste hierarchy*** criteria is very positive (++) as the proportion of recycled materials increases. The ***proportion/percentage of substances remaining in the same grade in the waste hierarchy, or in the same grade in the higher quality*** grade, is neutral (0). This is because the flows that are already recycled are not affected by this policy change.
As with Alternative VI.d1, this alternative involves several developments that influence the assessment of the criterion of ***proportion/percentage of substances moving to a lower level in the waste hierarchy***. As in Alternative VI.d1, dumping is allowed in this alternative if a higher quality processing is associated with it. This, in principle, means that more will be paid in. Since landfill tariffs are not applicable here, it can be assumed that this alternative leads to more landfill than alternative VI.d1.

At the same time, however, there has been avoided dumping. The material now processed through incineration plants leads to a limited amount of material collapse, which would be an even smaller stream. In addition, the increased use of recyclates reduces the use of primary raw materials, thus reducing the collapse of the production processes of primary raw materials, especially abroad. However, there is less direct landfill control in this alternative than in Alternative VI.d1. This may lead to a greater deposit in this alternative than in Alternative VI.d1. The assessment is therefore negative (-).

The **impact on the quality of secondary materials** scores in a neutral way (0). The produced secondary material already produced in the baseline situation is unlikely to deteriorate in quality. The processes for sorting out these flows and processing them into recyclate will not change. What does change in this alternative is that the bulk of the material that is now incinerated, whether or not after an initial separation step, can still be separated later. In section VI.d1, incentives may be given to go through very far in order to reduce the amount of residue to be landfilled, which in turn may result in a negative impact on the quality of the recyclate. This incentive is less present here than in alternative VI.d1. On the other hand, in this alternative, the quality is likely to be less decisive for sales than in alternative VI.d1. In this alternative, the sales of secondary raw materials are not encouraged by policy. As a result, the output of the secondary material is partly controlled by the quality of the material. In this alternative, the sales of secondary materials are financially supported by the Policy. This is likely to make secondary materials cheaper and therefore easier to sell, and will lead to less quality. These risks are balanced, leading to the assessment that the impact on the indicators ***applicability, returnability*** and ***workability*** of the secondary products is neutral (0).

Landfill and incineration target range

Table 4.142. Landfill and incineration alternative VI.d2 target range assessment

	Contribution to landfill/incineration restrictions	Landfill volume per year	-
		Amount of incineration per year	++

As indicated above when assessing the proportion/percentage of substances entering a lower step in the waste hierarchy, the impact on the ***amount landfilled*** will be negative (-). The essence of the alternative is to reduce incineration. The assessment on the criterion of ***annual amount of incineration is therefore*** very positive (++).

Environmental impact

Table 4.15. Assessment of environmental impact, alternative VI.d2

Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents per year)	+
	Energy use	Use of fossil fuels	0
		Energy use	0
	Water use	Water use	0
	Nitrogen emissions	Nox and NH3 emissions	+
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+

On balance, all sub-alternatives lead to more recycling and a lower level of incineration. Landfill volumes will increase slightly. Assessments of VI.d1, VI.d2 and VI.d3 are the same for the assessment of environmental impacts.

Although the landfill in the Netherlands is limited as a result of this alternative, a higher focus on waste separation, cleaning and recycling achieves lower input from primary raw materials. This also extends the length of materials in the chain. However, this requires an extension of separation and recycling processes. As this alternative also leads to a diversified process (from incineration to a process with separation, recycling, incineration and landfill), transport is increasing through the collection and dissemination of materials. All these changes have an impact on ***greenhouse gas emissions***. Shifting from incineration to recycling generates a net gain in overall CO2 emissions. The reduction in CO2 emissions resulting from, inter alia, the incineration of waste is offset by more and more intensive processing processes and transport. In addition, this alternative leads to a reduction in the use of primary raw materials and thus in the CO2 emissions from the extraction and processing of primary raw materials (with a significant part of this effect taking up abroad). These effects are difficult to quantify at this level, but several studies have shown that, on balance, a transition from incineration to recycling has a positive impact on the target of reducing **greenhouse gas emissions** (+).

More intensive processing and transport operations require a greater ***use of fossil fuels***. On the other hand, the reduced use of primary raw materials (and therefore less use in the extraction, transport and processing of primary raw materials) leads to lower use of fossil fuels. These effects are mutually reinforcing, and the ***use of fossil fuels*** criterion is assessed as neutral (0).

Compared to the reference situation, the amount of waste to be incinerated is decreasing and the (intensity of) recycling processes is increasing. This has the effect of shifting from energy-poor processing (incineration) to energy-demanding processing (recycling). The more and more intensive processing processes also require greater ***water consumption***. Another effect is that due to the reduced use of primary raw materials, the energy consumption of primary raw materials in extraction, transport and processing is reduced. Therefore, the starting point is that these effects cancel each other and that the balance for ***energy use*** and also ***water use*** remains the same. This results in a neutral score (0) for both indicators. However, it should be noted that the impact of reduced use of primary raw materials is mainly felt abroad.

In principle, the effects on greenhouse gases are also **nitrogen emissions** (NOx and NH3). Reduced waste incineration reduces nitrogen emissions. On the other hand, more and more intensive processing techniques and transport lead to an increase in nitrogen emissions, but this is outweighed by the reduced emissions from combustion. On balance, this alternative scores positive (+).

The reference situation is waste incineration, with risks such as soil contamination, air pollution, discharges and inefficient management of waste. The alternative reduces combustion and therefore **risks to humans and the environment from the spread of harmful substances**. Although landfill in the Netherlands is increasing very slightly, the impact on people and the environment is positive due to the decline in incineration. The ***distribution of pollutants to soil, water or the atmosphere*** and ***contribution to reducing the exceedance of standards soil, water and air quality score positively on these indicators*** (+).

Realisability

Table 3.16 Assessment of feasibility of alternative VI.d2

Realisability	Feasibility and enforceability (government)	Legal enforceability	--
		Practical enforceability	-
		Financial enforceability	-
		Indirect and/or long term costs	+
	Feasibility and enforceability (market)	Practicability practical	0
		Compliance with practical	0

Economic feasibility	+

Government

This alternative has some features that make it difficult for the administration to implement. Although the setting of a lower VAT rate for secondary raw materials is legally feasible, several caveats have to be taken into account. A lower VAT rate can be charged on (products made from only) secondary raw materials. However, this is more difficult when it comes to products using partly secondary and partly primary raw materials. This may be done on a pro rata basis. In principle, this pro rata recalculation should be legally defined. It is necessary to include this in products, as companies are allowed, in principle, to deduct the VAT paid on the raw materials when they also pay VAT on the product. Another difficult situation is the international presence in many raw material markets. In order to achieve a level playing field, rules at EU level will have to be adapted to allow this alternative. For this reason, the ***legal practicability*** of this alternative is highly negative (--).

Other difficulties mainly arise in terms of enforceability, as it is complicated to verify the pass-on of the lower VAT rate when it comes to a final product with partly secondary raw materials. This can be arranged in the form of a chain-of-custody certification. This is a certification which ensures that the secondary raw materials in products are checked at each processing stage. Another aspect of the test's financial and practical compliance is the fact that it covers ministries, for example both the Ministry of Infrastructure and Water Management and the Ministry of Finance. Financially, this is enforceable, but the costs are higher than in the reference situation, as it is more difficult to trace the secondary material and to keep the overview of payment flows of turnover taxes manageable. This increases the costs of enforceability. The international aspect also makes this more difficult to enforce financially. For this reason, the ***practical assessment of financial enforceability*** was negative (-). In the longer term, secondary materials will be used more, as the business case is favourable for waste operators. This will have a positive impact on society and will reduce ***indirect costs and/or longer-term costs***. This indicator scores for this reason (+).

Market
This alternative is practically feasible for the market. The business case can provide incentives to recycle more and increase processing capacity. However, there are effects on ***practicality and non-amenability*** for economic operators. This is because there will be a more extensive separation step. Where the separation limit is normally reached in relation to the dumping ban, further separation is still possible. It is, however, practicable and enforceable. For this reason, they score neutral (0). This alternative also has an impact on economic feasibility. This is because secondary raw materials can be offered a VAT rebate to their clients, increasing the demand for secondary products. This improved the business case for processors. As a result, ***economic feasibility*** is positive (+).

4.6 Alternative VI.d3: It is sent via fees charged for the use of primary raw materials

4.6.1 Alternative VI.d3 description

This implementation method uses a different pricing approach, namely by placing additional burdens on the use of primary raw materials to stimulate the use of recyclate. This encourages the market for secondary raw materials. The processor will therefore decide, based on the business case for recyclate, to further separate, burn less, recycle more and landfill more. This is reflected in the diagram below (this schedule applies to alternatives VI.d1, VI.d2 and VI d3).

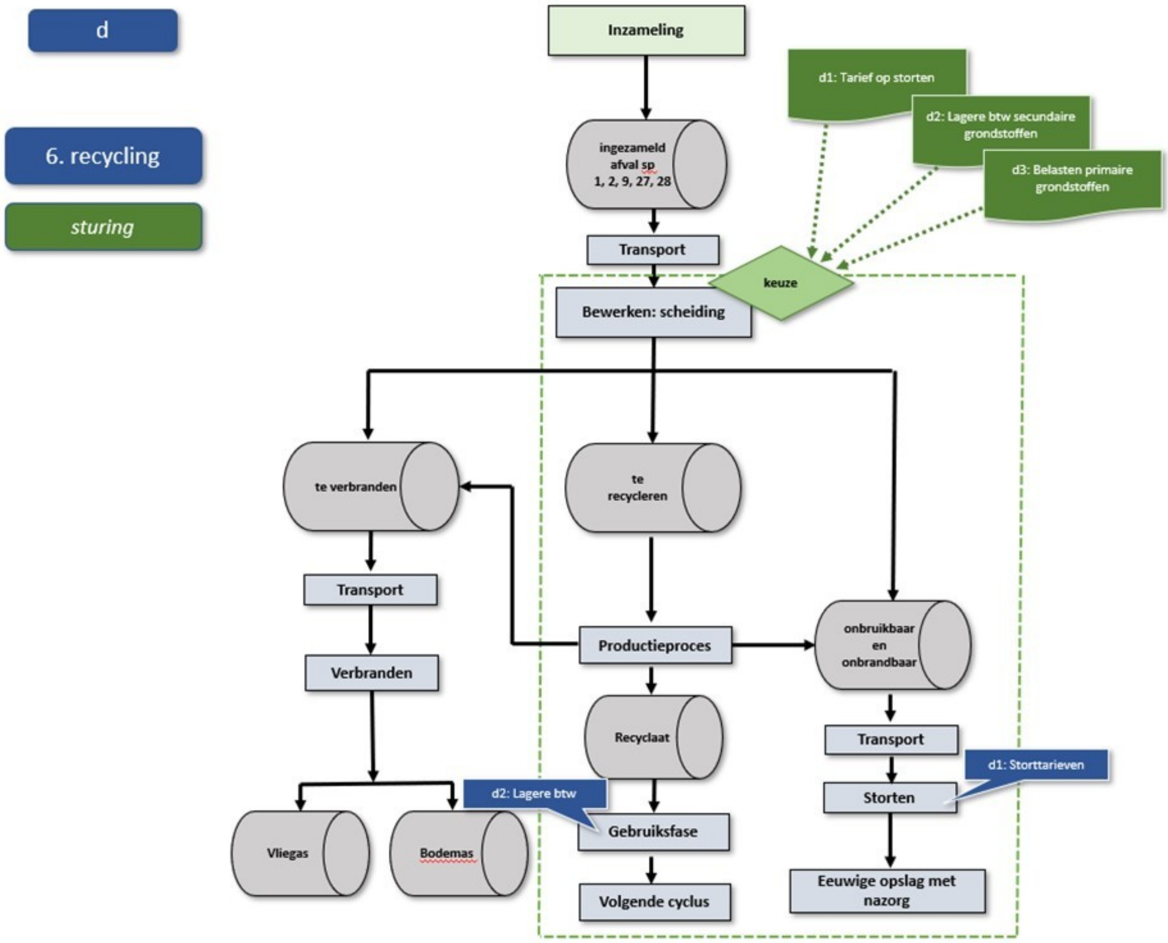

Figure 4.52. Process schedule Alternative VI.d3

The steering diagram above shows the process and where the choices for this alternative are made, with an impact further down the chain. As shown in the process chart, in this alternative the processor must make a choice in the separation process: the choice of incineration or recycling/landfill/incineration affects the cost sheets later in the process, when the respective form of processing takes place. The recyclable stream is processed into recyclate. The use of recyclate will be encouraged as primary raw materials become more expensive through VAT. This makes secondary products attractive and the market will grow. As a result, waste operators are encouraged to make the front-runner choice to recycle more and should naturally minimise landfilling of recyclable materials.

It is important to note here that when a tax is imposed on the use of primary raw materials, it is necessary to give proper consideration to which primary raw materials will be taxed and how this will affect the price of production of goods in the Netherlands. International aspects therefore also need to be considered. This will have very far-reaching consequences if all primary raw materials are to be taxed.

4.6.2 Impacts of alternative VI.d3

Circularity target range

Table 4.174. Circularity alternative VI.d3 target range assessment

	Efficient use of resources	Ratio of primary raw material – secondary material in products	+
		Ratio of renewable – non-renewable raw materials in products	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	++
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	0
		Share/percentage of substances moving to a lower level in the waste hierarchy	-
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	0
		Returnability	0
		Workability	0

The **efficient use of resources** sub-goal has a positive impact. The alternative leads to an increase in the proportion of recycled materials. This may reduce the use of primary raw materials. This contributes to a more favourable ratio between primary raw material and secondary material in products. This has a positive (+) impact on the ***ratio of primary raw material – secondary material in products***. The measures included in this alternative have no impact on the ***ratio of renewable – non-renewable raw materials***. The impact on this criterion is therefore neutral (0).

The score on the criteria ***share/percentage of substances moving up the waste hierarchy*** is very positive (++), as more are recycled. The ***proportion/percentage of substances remaining in the same grade in the waste hierarchy, or in the same grade in the higher quality*** grade, is neutral (0). This is because the flows that are already recycled are not affected by the measures in this alternative.

As with alternatives VI.d1 and VI.d2, this alternative will involve several developments affecting the assessment of the ***proportion/percentage of substances moving to a lower level in the waste hierarchy*** criterion. Similar to Alternative VI.d1, this alternative allows landfilling if recycling is attached to it. This, in principle, means that more will be paid in. As this is not done with landfill tariffs, it can be assumed that — as with Alternative VI.d2 — this alternative leads to more landfill than Alternative VI.d1. At the same time, however, there has been avoided dumping. The material now processed through incineration plants leads to a limited amount of material collapse, which would be an even smaller stream. In addition, the increased use of recyclates reduces the use of primary raw materials, thus reducing the collapse of the production processes of primary raw materials, especially abroad. However, in this alternative, there is a

less direct landfilling than in alternative VI.d1. This may lead to a higher level of landfilling in this alternative, as in Alternative VI.d2, than in Alternative VI.d1. Therefore, the assessment is similar to the assessment of alternatives VI.d2, i.e. negative (-).

The **impact on the quality of secondary materials** scores in a neutral way (0). The produced secondary material already produced in the baseline situation is unlikely to deteriorate in quality. The processes for sorting out these flows and processing them into recycle will not change. What does change in this alternative is that the bulk of the material that is now incinerated, whether or not after an initial separation step, can still be post-separated and recycled.

As in the case of Alternative VI.d2, this alternative does not have any direct financial incentive to discourage landfilling. This incentive is less present here than in alternative VI.d1. On the other hand, in this alternative, the quality is likely to be less decisive for sales than in alternative VI.d1. In this alternative, the sales of secondary raw materials are not encouraged by policy. As a result, the output of the secondary material is partly controlled by the quality of the material. In this alternative, as in section VI.d2, the marketing of secondary materials is financially supported by the Policy. This is likely to make secondary materials cheaper and therefore easier to sell, and will lead to less quality. These risks are balanced, leading to the assessment that the impact on the indicators ***applicability, returnability*** and ***workability*** of the secondary products is neutral (0).

Landfill and incineration target range

Table 4.18. Landfill and incineration alternative VI.d3 target range assessment

	Contribution to landfill/incineration restrictions	Landfill volume per year	-
		Amount of incineration per year	++

As mentioned above, this alternative leads to an increase in the number of falls. There is no limit to the amount of landfill allowed, so much more could be dumped. Therefore, the assessment against the criterion of ***annual landfill volume*** is negative (-). The essence of the alternative is to reduce incineration. The assessment on the criterion of ***annual amount of incineration is therefore*** very positive (++).

Environmental impact

Table 4.195. Assessment of environmental impacts of alternative VI.d3

Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents per year)	+
	Energy use	Use of fossil fuels	0
		Energy use	0
	Water use	Water use	0
	Nitrogen emissions	Nox and NH3 emissions	+
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+

On balance, all sub-alternatives lead to more recycling and a lower level of incineration. Landfill volumes will increase slightly. Assessments of VI.d1, VI.d2 and VI.d3 are the same for the assessment of environmental impacts.

Although the landfill in the Netherlands is limited as a result of this alternative, a higher focus on waste separation, cleaning and recycling achieves lower input from primary raw materials. This also extends the length of materials in the chain. However, this requires an extension of separation and recycling processes. As this alternative also leads to a diversified process (from incineration to a process with separation, recycling, incineration and landfill), transport is increasing through the collection and dissemination of materials. All these changes have an impact on ***greenhouse gas emissions***. Shifting from incineration to recycling generates a net gain in overall CO2 emissions. The reduction in CO2 emissions resulting from, inter alia, the incineration of waste is offset by more and more intensive processing processes and transport. In addition, this alternative leads to a reduction in the use of primary raw materials and thus in the CO2 emissions from the extraction and processing of primary raw materials (with a significant part of this effect taking up abroad). These effects are difficult to quantify at this level, but several studies have shown that, on balance, a transition from incineration to recycling has a positive impact on the target of reducing **greenhouse gas emissions** (+).

More intensive processing and transport operations require a greater ***use of fossil fuels***. On the other hand, the reduced use of primary raw materials (and therefore less use in the extraction, transport and processing of primary raw materials) leads to lower use of fossil fuels. These effects are mutually reinforcing, and the ***use of fossil fuels*** criterion is assessed as neutral (0).

Compared to the reference situation, the amount of waste to be incinerated is decreasing and the (intensity of) recycling processes is increasing. This has the effect of shifting from energy-poor processing (incineration) to energy-demanding processing (recycling). The more and more intensive processing processes also require greater ***water consumption***. Another effect is that due to the reduced use of primary raw materials, the energy consumption of primary raw materials in extraction, transport and processing is reduced. Therefore, the starting point is that these effects cancel each other and that the balance for ***energy use*** and also ***water use*** remains the same. This results in a neutral score (0) for both indicators. However, it should be noted that the impact of reduced use of primary raw materials is mainly felt abroad.

In principle, the effects on greenhouse gases are also **nitrogen emissions** (NOx and NH3). Reduced waste incineration reduces nitrogen emissions. On the other hand, more and more intensive processing techniques and transport lead to an increase in nitrogen emissions, but this is outweighed by the reduced emissions from combustion. On balance, this alternative scores positive (+).

The reference situation is waste incineration, with risks such as soil contamination, air pollution, discharges and inefficient management of waste. The alternative reduces combustion and therefore **risks to humans and the environment from the spread of harmful substances**. Although landfill in the Netherlands is increasing very slightly, the impact on people and the environment is positive due to the decline in incineration. The ***distribution of pollutants to soil, water or the atmosphere*** and ***contribution to reducing the exceedance of standards soil, water and air quality score positively on these indicators*** (+).

Realisability

Table 4.20. Assessment of feasibility of alternative VI.d3

Realisability	Feasibility and enforceability (government)	Legal enforceability	--
		Practical enforceability	-
		Financial enforceability	-
		Indirect and/or long term costs	-
	Feasibility and enforceability (market)	Practicability practical	0
		Compliance with practical	0
		Economic feasibility	-

Government
The introduction of this alternative is ***legally feasible*** for the public authorities, but complex. All primary raw materials should be given more weight. This may involve considering whether this is legally possible. The situation should also be considered when the raw material market is located at international level (see also reasoning in realisability for the government under Alternative VI.d2). For this reason, this alternative is scored very negatively (--). This also makes it ***practical*** for the authorities to ***implement and enforce*** this alternative. These indicators also score negative (-). Financially, this will have a significant impact, as in principle all primary raw materials are concerned. Indeed, it can make the Netherlands unattractive to producers without achieving the effective result, for example, by shifting production abroad. This is seen as a negative impact on society and is thus counted as ***indirect costs in the longer term***. For this reason, this indicator is assessed as negative (-).

Market
For the market, this alternative is ***practicable***. The tax on primary raw materials will be passed on by market participants in the products. ***Practically***, this alternative is also ***straightforward***. This price increase, once introduced, has been reflected in prices. These indicators therefore score neutral (0). However, this alternative has a negative impact on ***economic viability*** (-). It takes a lot of time and administration to adjust all prices for primary raw materials and products. As primary raw materials become more expensive in this alternative, it will become more attractive to engage with secondary raw materials. It is therefore not an incentive in a positive sense, unlike alternative VI.d3. As with Alternative VI.d2, there is a risk of reduced quality of the secondary raw materials. Reduced quality is reflected in a decrease in the purchase of products and may therefore lead to a decrease in turnover. On the other hand, primary raw material products become more expensive for everyone and may also cause a shift in trend towards higher demand for secondary products/raw materials, as it is cheaper.

4.7 Alternative VI.e: Sorting process requirements

4.7.1 Alternative VI.e description

This alternative should specify the components that should be sorted in any case. A plant which is well-graded must be able to dispose of residual material which is not combustible to the landfill. In order to ensure that sorting is indeed intensive, one example is the certification of sorting facilities. In the LAP, a minimum standard for mixed construction and demolition waste already exists and goes in this direction. This is because

requirements for the sorting process, but not yet a certification or rules on the disposal of the residue[243]. The diagram shows that these requirements influence the separation step.

The steering diagram in Figure 4.6 illustrates the process and where in this alternative choices are made, with an impact rising or able to occur further down the chain. As shown in the process chart, this alternative requires a choice in the separation process: the choice of incineration or recycling/landfilling/incineration has an impact on options later in the process, when the process takes place. This alternative sets requirements for the treatment of waste (from sector plans 1, 2, 9, 27 and 28) and results in a separation of a part to be incinerated, a part to be recycled and a part that is unusable and non-combustible (for landfill). The process requirements ensure that not an unreasonably high amount of recyclable material can end up in the residue to be landfilled. The recyclable stream is processed into recyclate. The recyclate is used in products until the weather, through waste collection, will move through a new cycle.

243Reaction note on views –NRD for Environmental Impact Assessment for the Circular Materials Plan

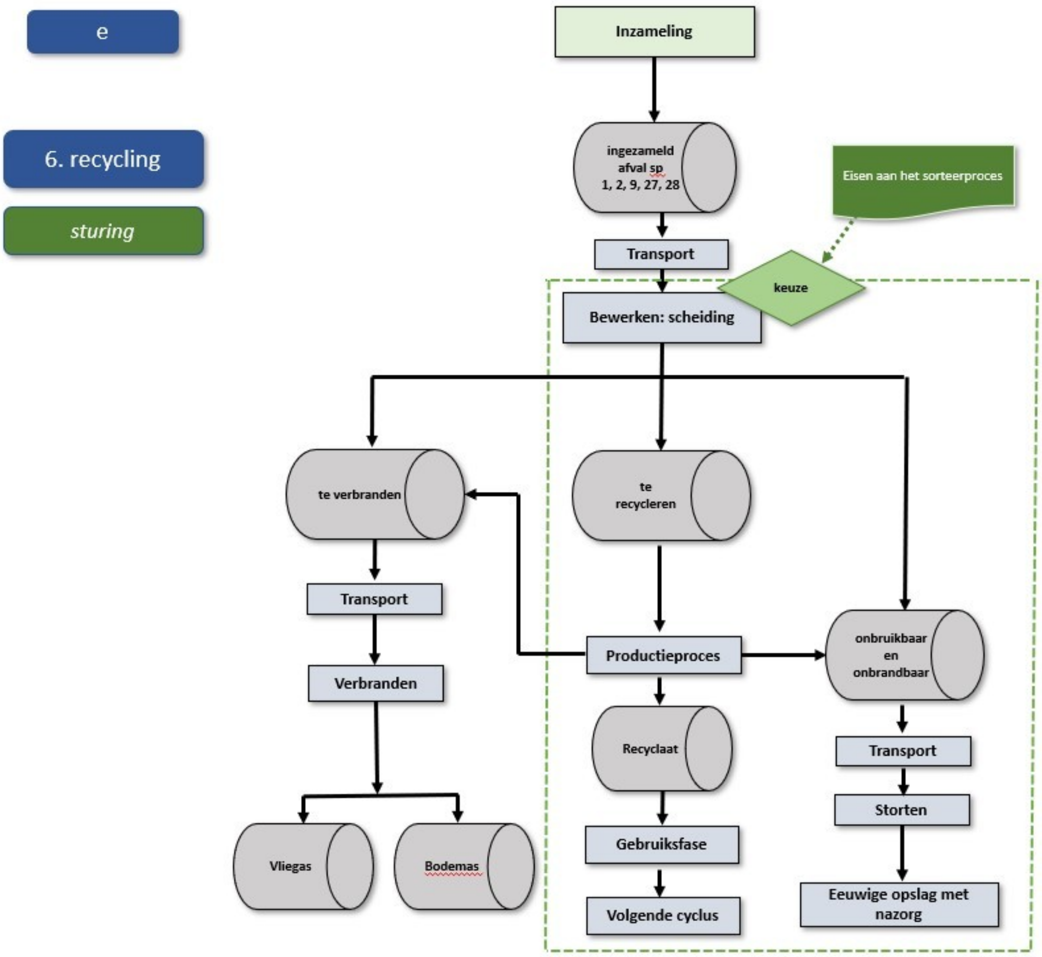

Figure 4.6. Process schedule Alternative VI.e

In this alternative, some additional factors should be highlighted. The alternative would only lay down requirements for the sorting process and not for the further processing of the flows resulting from this process. This does not automatically guarantee higher quality processing. However, the starting point is that processors

will only be certified if a business case is attached to it. This will probably only be the case if there is evidence that there is a sufficient market for the secondary raw materials.

4.7.2 Impacts of alternative VI.e

Circularity target range

Table 4.21. Circularity alternative VI.e target range assessment

	Efficient use of raw materials	Ratio of primary raw material – secondary material in products	+
		Ratio of renewable – non-renewable raw materials in products	0

	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	++
		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	0
		Share/percentage of substances moving to a lower level in the waste hierarchy	-
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	+
		Returnability	+
		Workability	+

The **efficient use of resources** sub-goal has a positive impact. The alternative leads to an increase in the proportion of recycled materials. This may reduce the use of primary raw materials. This contributes to a more favourable ratio between primary raw material and secondary material in products. This has a positive (+) impact on the ***ratio of primary raw material – secondary material in products***. The measures included in this alternative have no impact on the ***ratio of renewable – non-renewable raw materials***. The impact on this criterion is therefore neutral (0).

Therefore, the score on the criteria of ***proportion/percentage of substances moving up a higher step in the waste hierarchy*** is very positive (++). The ***proportion/percentage of substances remaining in the same grade in the waste hierarchy, or in the same grade in the higher quality*** grade, is neutral (0). This is because the flows that are already recycled are not affected by this policy change. The ***proportion/percentage of substances moving to a lower level in the waste hierarchy*** is negative (-). This is because landfill is also allowed to a limited extent, whereas landfill is not allowed now. This would mean that some of the material would also be processed at a lower grade. At the same time, however, there has been avoided dumping. The material now processed through incineration plants leads to a limited amount of material collapse, which would be an even smaller stream. In addition, the increased use of recyclates reduces the use of primary raw materials, thus reducing the collapse of the production processes of primary raw materials, especially abroad. It is expected that these considerations will result in a slight increase in collapse in the Netherlands. As a result, the score on the criterion ***Share/percentage of substances entering a lower level in the waste hierarchy*** is negative (-). In conclusion, the sub-objective **to stimulate high-quality waste processing** scores positively (+).

The **impact on the quality of secondary materials** scores positively (+). A sorting requirement ensures that more secondary material is produced, but does not provide a guide to the quality of this material. Quality will only be determined in the next steps of processing. However, it can be assumed that very high grading could also mean higher quality

is produced from secondary materials. However, this would require certificates to be issued on the basis of purity of mono-flows and not on the basis of the size of the residual flows. Otherwise, you will create the same perverse incentive as in alternative VI.d1. Indeed, if only soured mono-flows are produced, this would positively (+) affect the ***applicability, returnability*** and ***workability*** of those secondary products.

Landfill and incineration target range

Table 4.22. Landfill and incineration alternative VI.e target range assessment

	Contribution to landfill/incineration restrictions	Landfill volume per year	-
		Amount of incineration per year	++

As mentioned above, this alternative leads to an increase in the number of falls. There is no limit to the amount of landfill allowed, so more could be dumped. Even if sorting facilities were unlikely to be certified and would start producing much more landfill. Therefore, the assessment against the criterion of ***annual landfill volume*** is negative (-). The essence of the alternative is to reduce incineration. The assessment on the criterion of ***annual amount of incineration is therefore*** very positive (++).

Environmental impact

Table 4.23. Assessment of environmental impacts of alternative VI.e

Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents per year)	+
	Energy use	Use of fossil fuels	0
		Energy use	0
	Water use	Water use	0
	Nitrogen emissions	Nox and NH3 emissions	+
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+

Although the landfill in the Netherlands is limited as a result of this alternative, a higher focus on waste separation, cleaning and recycling achieves lower input from primary raw materials. This also extends the length of materials in the chain. However, this requires an extension of separation and recycling processes. As this alternative also leads to a diversified process (from incineration to a process with separation, recycling, incineration and landfill), transport is increasing through the collection and dissemination of materials. All these changes have an impact on greenhouse gas emissions. Shifting from incineration to recycling generates a net gain in overall CO2 emissions. The reduction in CO2 emissions resulting from, inter alia, the incineration of waste is offset by more and more intensive processing processes and transport. In addition, this alternative leads to a reduction in the use of primary raw materials and thus in the CO2 emissions from the extraction and processing of primary raw materials (with a significant part of this effect taking up abroad). These effects are difficult to quantify at this level, but several studies have shown that, on balance, a transition from incineration to recycling has a positive impact on the ***greenhouse gas emission reduction target*** (+).

More intensive processing and transport operations require more use of fossil fuels. On the other hand, the reduced use of primary raw materials (and therefore less use in the extraction, transport and processing of primary raw materials) leads to lower use of fossil fuels. These effects are mutually reinforcing, and the ***use of fossil fuels*** criterion is assessed as neutral (0).

Compared to the reference situation, the amount of waste to be incinerated is decreasing and the (intensity of) recycling processes is increasing. This has the effect of shifting from energy-poor processing (incineration) to energy-demanding processing (recycling). The more intensive processing operations also require increased water consumption. Another effect is that due to the reduced use of primary raw materials, the energy consumption of primary raw materials in extraction, sports and processing is reduced. Therefore, the starting point is that these effects cancel each other and that the balance for ***energy use*** and also ***water use*** remains the same. This results in a neutral score (0) for both indicators. However, it should be noted that the impact of reduced use of primary raw materials is mainly felt abroad.

In principle, the effects on greenhouse gases are also **nitrogen emissions** (NOx and NH3). Reduced waste incineration reduces nitrogen emissions. On the other hand, more and more intensive processing techniques and transport lead to an increase in nitrogen emissions, but this is outweighed by the reduced emissions from combustion. On balance, this alternative scores positive (+).

The reference situation is waste incineration, with risks such as soil contamination, air pollution, discharges and inefficient management of waste. The alternative reduces combustion and therefore risks to humans and the environment from the spread of harmful substances. Although landfill in the Netherlands is increasing very slightly, the impact on people and the environment is positive due to the decline in incineration. The ***distribution of pollutants to soil, water or the atmosphere*** and the ***contribution to reducing the exceedance of standards soil, water and air quality*** score positively on this alternative (+).

Realisability

Table 4.24. Assessment of feasibility of alternative VI.e

Realisability	Feasibility and enforceability (government)	Legal enforceability	0
		Practical enforceability	-
		Financial enforceability	0
		Indirect and/or long term costs	0
	Feasibility and enforceability (market)	Practicability practical	0
		Compliance with practical	0
		Economic feasibility	0

Government
For the ***public sector***, this alternative is ***legally feasible*** and has been assessed in a neutral manner (0). This is to allow landfill to be made if processors hold a certificate. ***Practical compliance*** is a bit more challenging. A sorter could be allowed to dump residual products if he holds a certificate. However, the Provincial Executive is responsible for accepting waste that may be landfilled. From the BSSA, there is a dumping ban on the aforementioned streams. This certificate would be an exception. Landfills must then be able to guarantee to the Environment Services that they will only accept waste that can actually be landfilled

to be launched. The certification will have to be issued by a party that wins confidence in landfills and environmental services. This also makes ***practical compliance*** more difficult and scores negatively (-).Financially, this certification is not costly. The ***financial enforceability*** is therefore assessed as neutral (0). It also scores neutrally on the criterion of ***indirect and/or long (more) term costs*** (0), it is difficult to predict whether this alternative will have positive effects on society's vision.

Market
Obtaining a sorting requirement certificate will be an option for processors to deposit if they can prove good sorting. In this case, the certificate will only be obtained by the operators if there is a positive business case, as it will take time (and money) for the operators to collect the certificates. The benefits will therefore have to be higher than the costs. As a result, the ***practicality and enforceability*** is assessed as neutral (0).
Market parties may need to make an additional effort to obtain certificates, possibly by investing in new sorting processes. As mentioned above, they will only do this if a positive business case is attached to it. However, this alternative has no direct impact on that business case. Therefore, the economic ***feasibility*** for market participants is neutral (0).

4.8 Alternative VI.f., combination of alternatives VI.d. and VI.e.

Chapter 5 describes the considerations that apply to a combined alternative, based on consideration of the alternatives (Section 5.3).

5. Full Consideration

Section 4 of this report describes the impacts of the alternatives and provides tables for each alternative. Section 5.1 presents an overview of these assessments (compared to the baseline situation). Based on the findings of the assessments of alternatives, Section 5.2 considers the five alternatives by theme.

5.1 Overall assessment

A comprehensive overview of the assessments of alternatives is presented in Table 5.1.

Table 5.1: Alternatives assessments

	Efficient use of resources	Ratio of primary raw material – secondary material in products	+	+	+	+	+	+
		Ratio of renewable – non-renewable raw materials in products	0	0	0	0	0	0
	Stimulating high-quality waste processing	Share/percentage of substances moving to a higher step in the waste hierarchy	++	+	++	++	++	++

		Proportion/percentage of substances remaining on the same level in the waste hierarchy or higher quality within the same level	0	0	0	0	0	0
		Share/percentage of substances moving to a lower level in the waste hierarchy	0	0	0	-	-	-
	Impact on the quality of secondary materials, including in a possible next cycle of recycling	Applicability	0	0	0	0	0	+
		Returnability	0	0	0	0	0	+
		Workability	0	0	0	0	0	+
	Contribution to landfill/incineration restrictions	Landfill volume per year	0	0	0	-	-	-
		Amount of incineration per year	++	++	++	++	++	++
Environmental impact	Greenhouse gas emissions	Emissions (in CO2 equivalents per year)	+	+	+	+	+	+
	Energy use	Use of fossil fuels	0	0	0	0	0	0
		Energy use	0	0	0	0	0	0
	Water use	Water use	0	0	0	0	0	0
	Nitrogen emissions	Nox and NH3 emissions	+	+	+	+	+	+
	Impact on risks to people and the environment through the spread of harmful substances	Dispersion of pollutants into soil, groundwater or atmosphere	+	+	+	+	+	+
		Contribution to reducing exceedance of standards in soil, water and air quality	+	+	+	+	+	+
Realisability	Feasibility and enforceability (government)	Legal enforceability	0	0	-	--	--	0
		Practical enforceability	-	0	-	-	-	-
		Financial enforceability	0	0	0	-	-	0
		Indirect and/or long term costs	0	0	0	+	-	0
	Feasibility and enforceability (market)	Practicability practical	0	0	0	0	0	0
		Compliance with practical	0	0	0	0	0	0
		Economic feasibility	0	0	0	+	-	0

In general, for all alternatives, it may be observed that the proportion of waste streams treated at a higher level may increase. In addition, the share of waste to be incinerated is decreasing and the volume of landfilling in the Netherlands is increasing to a limited extent.

These alternatives give the processor the choice to continue doing what they are doing now, or to establish more extensive processes and innovate in order to increase separation and recycling. This is because for these alternatives, dumping is only possible if it is demonstrated that another part of the waste has been processed in a better quality way (with the possibility of partial incineration). The current working method is a proven business case for the processor in a workable and well-known system. These alternatives provide the processor with a situation where uncertainties could lead to a business case.

The incentive to increase recycling – which is the underlying goal in these alternatives – is likely to be of a financial nature for the market, despite the likely positive sustainability ambitions of the processors. They will ask if any additional effort to increase separation and processing on balance results in something. This is balanced against the current positive business case. The business case is largely determined by the cost of additional processing, the revenue of the separated and recycled fraction and the cost of depositing the residual fraction. In the case of waste to be incinerated, the costs to be paid to the incineration plant will still be relevant.

While the business case is primarily determined by the cost of an additional processing step, allowing a limited amount of deposits may contribute to a better business case for processors. More landfill possibilities give the processor more room for manoeuvre to optimally divide a given waste stream into sub-streams of incineration (energy-containing materials but low recycling options), recycling (materials that generate something and market for them) and landfilling (non-combustible, non-recyclable). Combustible materials (such as plastics and wood) are both interesting for waste incinerators, because of their calorific value (as they produce high energy and low residue levels, mostly plastics), and for more recycling (with even higher or lower quality forms within them). For non-combustible materials (sand, gravel, metals, glass), this competition plays no role. For these materials (such as metals and glass), recycling is more self-evident, as it can be either sent to landfill or recycled. The material as part of a larger, more mixed flow through processing in an incineration plant does not generate anything but does generate costs. Alternative VI.e, which involves more sorting, is even more difficult to incinerate. As a result, a business case with more processing is becoming more realistic.

5.2 Topic by topic review

5.2.1 Circularity target

A closer look at the assessment of alternatives to the circularity objective, as indicated in Chapter 2, will in theory contribute to the goal of more and higher quality processing, thus positively contributing to the further transition to the circular economy. In some cases, the alternatives show differences in impacts.

The alternatives have a positive impact on efficient use of raw materials and stimulate high-quality waste processing (in the sense of higher-tier processing). It should be noted, however, that a number of alternatives increase the proportion of substances that are moving to a lower level in the waste hierarchy, in particular alternatives VI.d2, VI.d3 and VI.e. This is because low value added tax (VAT), more expensive primary raw materials and sorting certification do not provide a negative incentive to minimise landfilling.

There are no significant differences between the alternatives on the impact on the quality of secondary materials. However, there are several risks that lead to a quality reduction of secondary raw materials. For example, landfill pricing can have the effect of allowing the processor to go through the maximum amount possible to avoid landfill costs, with the result that the quality of the secondary products decreases. However, these risks are difficult to estimate and have therefore not been taken into account in the assessment.

As indicated in the overall assessment under Section 5.1, this policy option, although providing possibilities for innovation to generate initiatives that recycle more than what is happening now, requires additional impetus for innovation. These are not available in all alternatives except VI.d2 and VI.d3. As a result, the effectiveness of the other alternatives is expected to be limited. If the lack of incentive to innovate and invest in recycling is taken into account, it is expected that the score on the target range will be neutral for most alternatives.

5.2.2 Landfilling and incineration

The basis of all alternatives is to expand landfill possibilities, resulting in limited deposition rates for all alternatives. At the same time, the alternatives also tended to avoid tipping, as less use of primary raw materials was needed. These effects are difficult to quantify. Alternatives VI.d2, VI.d3 and VI.e are, however, expected to lead to an increase in dumping. This is also indicated in the previous section. However, there is a clear one-sided effect on incineration. The incineration of all alternatives will be substantially reduced.

5.2.3 Environmental impacts

In general, all alternatives lead to the same environmental impacts. A higher focus on waste separation, cleaning and recycling achieves lower input from primary raw materials. This also extends the length of materials in the chain. However, this requires an extension of separation and recycling processes. In all alternatives, the diversified process (from incineration to a process with separation, recycling, incineration and landfill) increases transport by collecting and distributing materials. All these changes have an impact on greenhouse gas emissions. Shifting from incineration to recycling generates a net gain in CO2 emissions. The reduction in CO2 emissions resulting from, inter alia, the incineration of waste is offset by more and more intensive processing processes and transport. In addition, reduced use of primary raw materials results in reduced CO2 emissions from the extraction and processing of primary raw materials (with a significant part of this effect taking up abroad).

In principle, the effects on greenhouse gases are also valid for nitrogen (NOx and NH3) emissions. Reduced waste incineration reduces nitrogen emissions. On the other hand, more and more intensive processing techniques and transport lead to an increase in nitrogen emissions, but this is outweighed by the reduced emissions from combustion.

More intensive processing and transport operations require more use of fossil fuels. On the other hand, the reduced use of primary raw materials (and therefore less use in the extraction, transport and processing of primary raw materials) leads to lower use of fossil fuels. However, the use of energy and water is increasing in all alternatives. There is a shift from energy-poor processing (incineration) to energy-intensive processing (recycling).

The alternatives reduce combustion and thus the risks to humans and the environment from the spread of harmful substances. Although landfill in the Netherlands is increasing very slightly, the impact on people and the environment is positive due to the decline in incineration.

5.2.4 Feasibility

The main differences between the alternatives are in realisability.

For the administration, the alternatives are feasible in order to define and maintain the increased landfill capacity (alternatives VI.b and VI.c). Requirements for the sorting process through a system of plant certification are feasible, but more challenging (Alternative VI.e). This is because permitting landfilling on the basis of certification must be done in a way that guarantees that landfills can justify an informed choice in the environmental services. It is also important to note that similar systems have not achieved their intended purpose in the past. Price-driven alternatives are also more challenging.

This requires coordination between relevant ministries and with the Tax and Customs Administration. Each of the different options presents its own challenge. In the case of treatment through the landfill tariff through the Wbm, there will be a need to differentiate between landfilling and incineration (alternative VI.d1). In addition, it may also provide an incentive towards a form of low-grade material recycling to avoid paying taxes. In the case of control via a lower VAT rate on secondary raw materials, the challenge is that products use partly secondary and partly primary raw materials (Alternative VI.d2). In addition, the international nature of the raw material markets is a complicating factor. The latter also applies to sending via higher VAT rates on primary raw materials (alternative VI.d3).

Other aspects of realisability play for the market than for the public authorities. Increasing possibilities for landfilling is associated with an increased administrative burden. The deposit in the different steps of the chains involving several parties will have to be well recorded. As already indicated in section 5.1.1, the question is whether landfill expansion options will also lead to increased recycling. This will depend on the processor's business case, balancing the current process against a process with more potential for landfilling.

The price-driven alternatives are feasible for the market, but they do pose a number of points for attention. In the case of guidance on landfill costs (alternative VI.d1), on the one hand more options for landfilling are given, but landfill costs are higher. The processor will then look for an optimum, with the question being whether this will also lead to more recycling or what will do with the quality of the secondary product and the recycling options over several cycles. In the case of lower VAT on secondary raw materials (alternative VI.d2), processors may have to produce lower quality secondary products in order to reach optimum quality with other costs, including landfill costs. The only investment for sorters and waste processors is to increase processing capacity for recycling at the beginning. Similarly, in the case of a higher price drive for the use of primary raw materials (Alternative VI.d3), there is a similar risk that processors will have to produce lower quality products in order to reach optimum levels.

For the sorting process (VI.e) requirements alternative, the investment in new facilities and the necessary certification determine the business case. If this is positive, the market will be able to opt for certification. However, it should be noted that the current system, by way of derogation, leads in practice to a relatively similar result as obtaining the right to deposit by means of certification. This would therefore mean that processors will continue to use this route instead of the extra unknown bureaucratic burden of a certification.

Finally, for all alternatives, more and better processing may have an impact on the price of the product to be disposed of. Therefore, clients should be prepared to pay this price.

5.3 Consideration of alternative VI.f

The above analysis shows that the alternatives are not sufficiently distinctive in the areas of target achievement, landfill and incineration, and environmental effects. Positive impacts are expected on these topics.

In addition, the analysis shows that in the alternatives, where guidance is provided by setting percentages of maximum deposition rates, may be less effective in practice due to the lack of a real incentive for further processing.

Price-driven alternatives score less well on feasibility, with the variant focusing on landfill prices appearing to be the most practicable. Sent variants

by adjusting VAT on primary or secondary raw materials, too many feet are in the Earth and can also be very complex in the international context.

Overall, the best scores achieved are in the alternative, which focuses on more intensive sorting processes. Therefore, it seems most obvious to consider a combination alternative. This could be combined with VI.c. In this alternative, if the processors are given a further push by making landfill less attractive at more expensive prices, an even greater effectiveness can be achieved. As the assessment of feasibility shows, a combination of the two measures will be feasible in one alternative for the public administration and the market. The question is whether this in practice leads to a different reality. It can also be argued that this essentially leads to the same result as for Alternative VI.d1.

The success of the combination between certification of sorting facilities to encourage more high-quality recycling (VI.e) and the landfill price alternative (VI.d1) depends on many factors, including large differences in waste stream composition between different areas, disposers and availability
flows over time. These factors affect the sales potential of these raw materials and the profitability of sorting facilities.

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