BETONGELEMENT FORENINGEN

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References

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https://ec.europa.eu/growth/toolsdatabases/tris/en/search/?trisaction=search.detail&year=2020&num=790

Order approving the calculation method provided for in Article R111 - 20 - 5 of the Construction and Housing Code
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Order on the energy and environmental performance requirements for residential, office or primary or secondary education buildings in metropolitan France
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Norwegian Precast Concrete Association – comments on The (three) French notified drafted regulations using the TRIS1 procedure

The Precast Concrete Association (BEF) is an industry association in the concrete, construction and the consultancy sector. BEF organize 170 member companies with more than 3,500 employees. The companies are present in all Norwegian counties, where they contribute to employment, value creation, social responsibility and innovation.

Introduction

The ER (Environmental Regulation) 2020 introduces, for the first time, an environmental assessment of buildings. It is a tool to guide construction practices towards sustainable solutions to combat climate change. It is therefore crucial that the assessment method it uses is based on reliable methods in line with the best current international scientific knowledge in order to ensure the credibility of its approach. The ER 2020 methodology recently disseminated by the DHUP (Direction de l'Habitat, de l'Urbanisme et des Paysages) proposes the introduction of an innovative indicator: "impact on climate change 100 years after its construction".

This choice to introduce a new indicator presents significant risks. The interest of permanent carbon storage in mitigating climate change is well documented (and already taken into account in the SEFs for bio-based construction products), but the interest of temporary carbon storage is still debated in the scientific community. For example, no international or European standard, or even no European regulation, concerning the carbon footprint takes into account the temporary storage of carbon. There is therefore an international (and notably European) consensus, reflected in ISO 14067:2018, that temporary carbon storage should not be taken into account in

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the carbon footprint of buildings. By introducing such an indicator to assess buildings in France, the assessments carried out by the construction sector would be neither comparable to other countries nor consistent and cumulative with those of other sectors (particularly in France). The image and seriousness of the entire construction sector would thus be at stake.

The new indicator is presented as being based on the dynamic LCA method. Assuming that the results of this method are not totally erroneous (there is a debate on the validity of the simplifications on which it is based), the scientific community agrees that it has significant weaknesses. On the one hand, the choice of the time horizon is an arbitrary choice, which has a major influence on the credit to be given to temporary carbon storage. There is no consensus on a horizon of 100 years after construction, a choice that totally neglects the interest of the generations that will come after - climate change will not stop in 100 years. On the other hand, the method favours products with significant emissions at the end of their life cycle, i.e. all products containing carbon, such as plastics or wood. If their end-of-life is not properly managed, these products could give rise to massive emissions several decades from now. The Dynamic LCA method therefore pushes to transfer to future generations the responsibility for the proper management of emissions from buildings built today, and to motivate industry and responsible citizens to build a carbon-free industry and society now.

The new DHUP indicator is in fact based on a simplification of the dynamic LCA method, to the point where it would be more accurate to speak of "discounting calculation" of impacts rather than "dynamic calculation". These simplifications introduce additional weaknesses. For example, the impacts of end-of-life methane emissions are greatly minimised compared to dynamic LCA: the new indicator therefore gives a huge and unjustified advantage to products and processes that emit methane at the end of their life cycle, which are for the most part biobased products. Furthermore, this indicator also minimises the benefits of recycling or reusing construction products at the end of their life. It will therefore discourage building designers from using recyclable products, which is the opposite of the government's objectives with the law on the fight against waste and the circular economy carried by the same Ministry.

An accountancy trick from a strong timber- and wood industry lobby

The proposed legislation is an “accountancy trick” to achieve a theoretical net-zero carbon which will postpone burden on future generations, hides unwanted figures and hampers innovation in the building sector. The proposed legislation will not contribute to reduced climate gas emissions from the construction product industry up to 2030 or beyond. We find that it is more likely than unlikely that a strong lobby from the French timber and wood processing industry is behind the drafted legislation, given that the scope does not give any proven positive climate effects.

One may wonder what the real consequences of the introduction of this new indicator in the regulations will be. There are significant risks of harmful consequences for the climate, which have not been assessed. This lead us to oppose the introduction of the new so-called "dynamic" indicator in the ER 2020. If, despite all the reservations about the dynamic calculation presented in this note, the DHUP nevertheless wished to favour products that allow temporary carbon storage (plastics, wood, etc.), it would be appropriate, beforehand, to obtain a strong consensus on the indicator and to ensure that everyone (countries and sectors) will use it. To do this, and to ensure that its introduction does not undermine French policy, it would also be essential that a detailed scientific analysis be carried out on the real consequences of introducing this new

indicator into the regulations, and in particular those of a massive increase in the demand for carbon-containing products (wood, plastic, etc.) for construction.

To date, the FDES for biobased construction products account for the benefit related to the permanent storage of carbon due to photosynthesis but do not take into account the "benefit related to deferred emissions" or "temporary storage" of the Carbon of the products. The issue of taking into account temporary carbon storage has already been discussed in the past, and experts have decided that it should not be included in the calculation of the carbon footprint;

1. The ISO 14067 standard, revised in 2018, is the reference for all international standards for calculating carbon footprints; it requires that the temporary storage of carbon not be taken into account when calculating the carbon footprints of products.

2. The ILCD Handbook, developed by the European Commission's DG JRC, recommended that temporary carbon storage be taken into account. This requirement is no longer present in the PEF (Product Environmental Footprint) guide, which can be considered as an evolution of this ILCD standard.

3. In the field of construction, the proposal was discussed by the experts mandated by all European countries within the framework of the work of CEN/TC 350 revising standard EN 15804 and was rejected.

Putting the burden on future generations

Considering the temporary carbon storage of bio-sourced materials simply corresponds to shifting the burden on future generations, without really solving the problem. Our children will have to make even bigger efforts to cope with the temporarily stored carbon once this will be released. But it is not our problem, isn’t it? The coefficients reducing the impact of future emissions (and absorptions) goes in the same direction, against all principles of circular economy.

The Global Warming Potential indicator, developed by the IPCC and currently used for the assessment of buildings, does use a time horizon of 100 years. However, it is not based on a dynamic LCA calculation, and the reasons why a time horizon of 100 years was chosen are not valid for a dynamic calculation. Climate change will not stop in 100 years. The choice of such a time horizon does not take into account the interests of the generations that will come after. On the scale of climate change, it is a short-term vision, contrary to the principles of sustainable development.

Finally, with a dynamic LCA calculation, the impacts that occur at the end of life have a lower contribution to the total impacts of the building. There will therefore be a tendency to favour products whose emissions occur at the end of their life rather than at the beginning of their life (for example, products that are incinerated at the end of their life, such as plastic or wood). With "traditional" building products, most emissions occur during the production stage. They are well known and can be controlled. Conversely, when emissions take place at the end of life, one can only make an assumption about how it will actually be managed. By choosing to use these products, the responsibility for managing the building's emissions is thus transferred to future generations, which is contrary to the principles of sustainable development.

On the other hand, it might be tempting to think that the postponement of GHG emissions could leave time for the development of technologies and knowledge in the field of controlling impacts on global warming. This is a risky gamble, as it does not allow us to control the future effects of emissions today. It pushes efforts back into the future and demotivates industrialists and managers in the construction of a decarbonised industry and society.

No whole life cycle thinking

All stakeholders agree on the fact that the carbon footprint of a good or service shall be assessed on the whole life cycle in order to apprehend the different implications of complex systems. Although sometimes difficult due to the complexity of some systems (e.g. in the built environment), any other approach would bring sub optimisation in the best case and negative effectives in the worse. By splitting the manufacturing and the use phase, the proposed methodology would clearly not reach, or even worsen, the initial objectives.

The simplified DHUP method is presented as a "simplified dynamic LCA". A true dynamic LCA calculation must be carried out at the level of the elementary flows, when performing the FDES and PEPs. The simplified DHUP method cannot be described as a "dynamic LCA" method. At most, it is a method for discounting GHG emissions, whose discount factors are calculated using a dynamic LCA method. The method for calculating the environmental performance of buildings for RE2020 should therefore refer to a "discounted calculation" rather than a "dynamic calculation".
In addition, the simplifications introduced by DHUP can give very different results from those of dynamic LCA. For example, :

> The DHUP indicator is calculated by multiplying the results in kg CO2 eq. from the FDES. According to the DHUP indicator, shifting an emission of 1 kg of methane by 50 years is equivalent to shifting 25 kg of carbon dioxide, which is equivalent to not emitting 10.5 kg of CO2.
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> With a dynamic LCA calculation, shifting an emission of 1 kg of methane by 50 years is equivalent to not emitting 1.6 kg of CO2 and a horizon of 500 years after construction, equivalent to not emitting 0.2 kg of CO2).

The simplified indicator also considers that all emissions related to the production stage (module A) take place in year 0. As far as wood products are concerned, this is a questionable assumption: the tree captures carbon during its entire growing period, which can be from 500 to 1000 years for Nordic pine and spruce. I addition the forest bed (symbiotic organisms) will accelerate its uptake of carbon as the forest grows old. In an ESF for a wood product, when it comes from a sustainably managed forest, a carbon credit is associated with the fact that another tree will grow back on the plot from which the tree was taken, and that it will capture carbon. For wood from a non-sustainably managed forest, no trees will be replanted and no credit is given. But this carbon capture during the growth of the wood takes place over several years, and not entirely in year 0 Choosing to count all in year 0 maximises the benefit of storing carbon in the wood, which gives an unjustified advantage to wood products. Let's take the example of a wood species that would take 10 years to mature. The wood product is made from a tree cut down in year 0,

another tree grows between years 1 and 10, and the product is (presumably) incinerated in year 50.

> With a dynamic LCA calculation using a horizon of 100 years after construction, this scenario is equivalent to not emitting 0.377 kg C02 per kg of stored CO2. Considering a 500 year horizon after construction, this is equivalent to only 0.069 kg CO2 not emitted per kg of CO2 stored.
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> With the new DHUP indicator, the same scenario corresponds to not emitting 0.413 kg of CO2, an advantage of about 10% compared to a dynamic LCA with a 100-year horizon, and about 6 times more than the result obtained with a dynamic LCA with a 500-year horizon

Compared to a real dynamic LCA, the simplified method therefore greatly overestimates the benefits of a shift in methane emissions and carbon storage in wood. While it is understandable that the DHUP wants a method that is simple to implement, it appears in fact that all the trade-offs that have been made, without transparency and without consultation, point in the direction of an unjustified advantage to certain products, particularly bio-based products.
In addition, this new indicator also minimizes the benefits of recycling or reusing construction products at the end of their life. It will therefore discourage building designers from using recyclable products, which is the opposite of the government's objectives with the law on the fight against waste and the circular economy.

Obstructing research, innovation and development in the construction sector

The proposed methodology would basically and simply stop any innovation in the sector: construction solutions with artificially “negative” carbon footprint do not need to do anything to improve the present manufacturing, transport and construction processes; construction solutions with “positive” carbon footprint will never be able to compete (except maybe by unnecessarily putting bio-sourced materials inside their existing systems) and will simply stop investing in innovation and development

In view of the advantage given to bio-based products by the so-called "dynamic" calculation method, it is highly likely that most architects will opt for wood-based construction solutions as a priority, assuming that it will necessarily be sustainable wood. Numerous studies show that only the preservation of a well-managed and natural forest where clear cut industrial logging is banned can significantly reduce CO2 emissions. The fight against climate change cannot be done at the expense of biodiversity. What would be the consequences for biodiversity on French territory and, indirectly, abroad, if forests currently heavily exploited and sheltering biodiversity were forced in a even more intensive pattern comparable to the destructive Swedish clear cut industrial logging policy.