The Federation of the European
Precast Concrete Industry

10 good reasons to assess environmental performance at construction works level, not to set product limits

Supporting Document for the BIBM Position paper on the Industrial Accelerator Act

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Product-level information is essential as input data, but product-level limits should not become a substitute for whole-life-cycle assessment of buildings and infrastructure.

Executive summary

The precast concrete sector fully **supports the objective of accelerating industrial decarbonisation** and creating lead markets for lower-carbon products within construction works. The European Union needs clear, reliable and comparable environmental information to reward innovation, support investment and reduce emissions across the built environment.

Public procurement policies are an important lever for **accelerating the uptake of lower carbon products**, provided it is backed by targeted investment and support to expand lower carbon solutions and mitigate the additional costs. However, setting binding environmental limits at individual product level, in particular for precast concrete products, risks creating a misleading and inefficient approach to decarbonisation. A low-carbon product or component does not automatically result in a low-carbon building or infrastructure work.

Environmental performance should therefore **be assessed primarily at** the level where the relevant design choices are made and where the actual environmental outcome can be measured: the **construction work**. The **precast concrete industry is committed to provide product-level information as essential input data**, but product-level limits should not become a substitute for whole-life-cycle assessment of buildings and infrastructure.

The Industrial Accelerator Act should **create demand for decarbonised solutions** while remaining aligned with the logic of the Energy Performance of Buildings Directive, the Construction Products Regulation and European life-cycle assessment standards (EN 15978 and EN 15804). **The right policy objective is** not simply to increase the share of products labelled "low-carbon", but **to deliver buildings and infrastructure with lower life-cycle impacts**.

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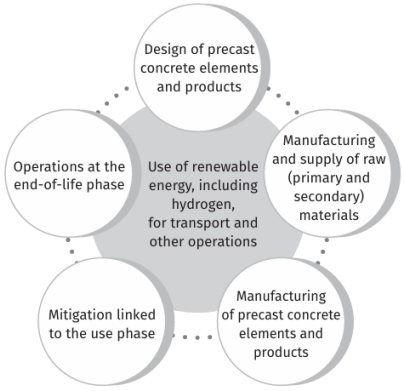
10 good reasons to assess environmental performance at construction works level

1. Construction products are intermediate products, not the final (environmental) outcome

Precast concrete elements and other construction products are not used in isolation. They are combined into buildings, bridges, tunnels, drainage systems, roads and other infrastructure works. Their environmental performance depends on how they are designed, specified, transported, installed, maintained, replaced, reused or recycled.



A product-level limit may assess only one part of this chain. It cannot capture whether the product helps reduce the total quantity of material used, extends the service life of the construction work, improves operational performance, reduces maintenance, enables reuse or avoids future replacement.

The climate objective is not to minimise the footprint of each product in isolation. **The objective is to minimise the life-cycle impact of the construction work as a whole**.

2. Low-carbon products do not necessarily lead to low-carbon construction

A product may be labelled "low-carbon" because it performs well against a product-specific benchmark. Yet the final construction work may still have a high environmental impact if the design uses **excessive material**, requires **additional layers or components**, has a **shorter service life**, **increases maintenance needs** or creates inefficient logistics.

For example, a concrete mix with a lower GWP per cubic metre may not deliver the lowest GWP at building level if it requires larger sections, longer curing times, additional reinforcement, more protective measures or earlier replacement. Similarly, a lower-carbon product may be less appropriate in a specific exposure class, structural function or infrastructure application if it compromises durability or leads to additional interventions over time.

	Traditional prestressed concrete deck (C35/45)		**High performance prestressed concrete deck (C80/95)**	
	"Low-carbon" concrete 270 $kgCO_2eq/m^3$		**"High-carbon" concrete 340 $kgCO_2eq/m^3$**	
	quantity	***GWP ($kgCO_2eq$)***	***quantity***	***GWP ($kgCO_2eq$)***
Average thickness (m)	0.75		0.37	
Concrete volume (m^3)	390	105.300	188	63.920
Rebars (t)	39	44.460	39	44.460
Prestressed steel (t)	12	13.680	8	9.120
Weight (deck) (t)	975		520	
GWP subtotal		**163 440**		**117 500**

Reference: Sustainable practices for climate change

A credible low-carbon construction policy must therefore avoid the assumption that product-level optimisation automatically delivers project-level decarbonisation.

3. Construction work assessment reduces overall impacts and avoids shifting them

Environmental assessment should not focus only on one indicator or one life-cycle stage. Global warming potential is essential, but it is not the only relevant environmental impact. **Construction products may also affect resource use, water use, land use, air quality, biodiversity, waste generation, circularity, durability and end-of-life performance**.

Assessing at construction works level makes it possible to consider the full life cycle and to avoid burden shifting between products, stages and environmental indicators. This approach is currently captured into key European standards: EN 15978 (calculation method at building level) and EN 15804 (product level assessment as input).

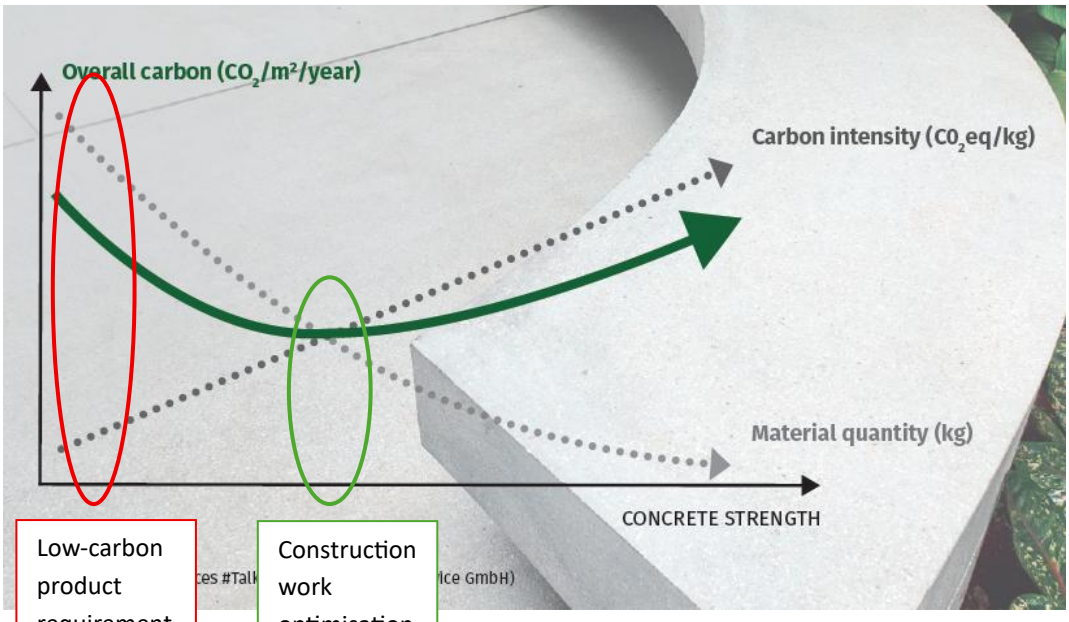
A narrow product limit based only on GWP, or only on production-stage emissions, may encourage choices that reduce one indicator while increasing others. It may also incentivise solutions that look beneficial at the factory gate but create additional impacts during transport, installation, use, maintenance or end of life.

4. Structural performance and material efficiency are captured through construction work assessment

Construction materials are selected for performance. Strength, stiffness, fire resistance, acoustic performance, thermal mass, durability, watertightness, robustness and dimensional accuracy all influence the amount of material needed and the performance of the final asset.

A product with a higher impact per unit may enable a more efficient structure, longer spans, thinner sections, reduced maintenance, fewer additional components or a longer service life. In such cases, the apparently "higher-carbon" product may contribute to a lower-carbon construction work.

This is also relevant when assessing the role of clinker in cement and concrete. High-clinker cements may appear less sustainable when assessed only at product level. However, when combined with appropriate admixtures that improve cement hydration and performance, they can enable excellent mechanical properties while **minimising the total quantity of cement and clinker required in the final concrete mix**. In some applications, this can lead to a better overall environmental outcome than using a lower-clinker cement that requires higher binder content, additional processing, or does not deliver the same performance efficiency.



Reference: BIBM Decarbonisation Pledge

Product limits risk rewarding the lowest impact per unit rather than the lowest impact per function. In construction, the relevant unit is not always one tonne or one cubic metre. The relevant unit is the functional performance of the completed building or infrastructure work over its reference service life.

5. Construction work assessment values durability and long service life

Durability is one of the most important drivers of whole-life environmental performance. A construction work that lasts longer, needs fewer repairs and remains fit for purpose over time can reduce the need for replacement materials, additional transport, site works and waste treatment.

If product limits are set too narrowly, they may **push the market towards solutions with lower initial declared impacts but uncertain long-term performance** in demanding exposure conditions. This is particularly relevant for infrastructure, water management systems, marine works, bridges, tunnels, foundations and other applications where safety and durability are essential.

A construction works-level approach allows environmental performance to be balanced with technical performance, durability and service-life requirements.

6. Construction work assessment rewards innovative and circular solutions

Circularity is not always visible in a simple product GWP limit. **Reusable, demountable, repairable or long-life solutions may require more robust products at the outset** but can deliver environmental benefits over several life cycles. Precast concrete, for instance, can support efficient production, quality control, reduced waste, fast installation, design for disassembly and potential reuse, depending on the project and design.

Product limits that focus only on initial production impacts may discourage such solutions. They may also penalise products designed for adaptability, modularity or repeated use if these benefits are not credited at product level.

A construction works-level assessment can better account for circularity strategies such as material optimisation, design for deconstruction, reuse of components, recycling, extended service life and reduced waste on site.

7. Construction work assessment improves design freedom and avoids locking in suboptimal solutions

Decarbonisation in construction requires a combination of material innovation, structural design, digitalisation, industrialised construction, efficient logistics, improved execution, circularity and better procurement. **No single product criterion can capture this complexity**.

Rigid product limits risk narrowing the solution space. They may encourage specifiers to select compliant products rather than optimise the whole project. This could limit competition between different design approaches and reduce incentives for engineers and manufacturers to innovate at system level.

This is particularly relevant for precast concrete structures, and especially for prestressed elements, where high early strength is essential to enable safe and efficient production. In many precast factories, production is based on daily casting cycles, rapid demoulding, accurate curing and carefully optimised structural design. These

processes allow manufacturers to reduce element thicknesses, use materials efficiently and achieve significant **material savings** at construction works level when using the right type of binder.

Performance-based regulation should define the environmental objective and allow the market to find the best way to achieve it. Construction works-level assessment is better suited to that objective than prescriptive product limits.

8. Use harmonised product information as input, not as the final assessment

The European framework already provides harmonised environmental information for construction products through Environmental Product Declarations (EN 15804) and through the Declaration of Performance (and Conformity) under the Construction Products Regulation. These instruments ensure that reliable, comparable and verified product data are available across the internal market.

Their purpose is to provide transparent input data, not to rank products in isolation. Environmental performance should be assessed at the level of the construction works, where products are combined and optimised according to their functional contribution, service life and interactions with other building elements.

Using harmonised product information as the basis for functional unit-based and whole-life assessment allows designers and procurers to optimise the overall environmental performance of buildings and infrastructure. This preserves technology neutrality, rewards innovative design solutions, and avoids misleading conclusions that can arise from comparing products outside their intended application.

9. Construction work assessment supports affordability and housing delivery objectives

Europe needs to decarbonise construction while also addressing urgent needs for housing, infrastructure, resilience, defence, renovation and industrial capacity. **A policy that increases complexity, restricts available solutions or raises costs without guaranteeing lower whole-life impacts could undermine these objectives**.

The most cost-effective carbon reductions often come from better design, efficient use of materials, standardisation, offsite construction, reduced waste, faster construction, optimised logistics and longer service life. Product limits alone may miss these opportunities.

Assessing at construction works level allows public authorities to pursue carbon reduction, affordability, productivity and quality together.

10. EU legislation is already moving towards construction work life-cycle assessment

The revised **Energy Performance of Buildings Directive** introduces life-cycle GWP calculation and disclosure for new buildings. This confirms that the **EU's direction of travel is to assess climate performance at building level over the life cycle**.

The Construction Products Regulation should support this by providing reliable product data. Product environmental information is indispensable, but it should serve as an input into the assessment of the construction work, not replace it.

The Industrial Accelerator Act should therefore be aligned with this framework. It should help create demand for decarbonised industrial products while ensuring that the final performance objective remains the reduction of life-cycle environmental impacts of buildings and infrastructure.

A better alternative: from product limits to construction works performance

Instead of setting rigid product limits, EU policy should establish a coherent framework based on the following principles.

1. Use product data, but assess final performance at construction work level

Manufacturers should provide reliable, harmonised and verified environmental information for construction products. This data should feed into building and infrastructure life-cycle assessment tools. The regulatory or procurement target should apply to the construction work, not to each individual product in isolation.

2. Apply a functional-unit approach

Environmental performance should be assessed against the function delivered: for example, one square metre of building over a defined reference study period, one structural element meeting defined performance requirements, or one metre of infrastructure delivering a specified service life and capacity.

This avoids misleading comparisons based only on tonnes, cubic metres or kilograms of CO_2 equivalent per unit of product.

3. Consider the full life cycle

Assessment should include production, transport, construction, use, maintenance, repair, replacement, demolition, waste processing, reuse and recycling, as relevant. This is essential to avoid burden shifting and to reward durable, circular and resource-efficient solutions.

4. Keep GWP central, but not isolated

GWP is a priority indicator and should remain central to climate policy. However, it should be considered alongside other environmental and technical aspects, including resource efficiency, circularity, water use, waste, durability, robustness, fire safety and resilience.

5. Use public procurement to reward outcomes

Public procurement should reward construction works that achieve lower life-cycle impacts while meeting safety, durability, performance, affordability and delivery requirements. Procurers should be encouraged to use life-cycle assessment, performance-based specifications and award criteria that recognise project-level optimisation.

6. Support lead markets without distorting design choices

The EU can create lead markets for lower-carbon industrial products through transparent product data, voluntary performance classes, public procurement incentives, innovation funding and support for industrial decarbonisation. However, these measures should not prevent project teams from choosing the combination of materials and systems that delivers the best overall environmental outcome.

General Policy recommendation

The EU should focus on whole life cycle assessment at construction work and avoid rigid product-level environmental limits for precast concrete products without considering their function within the work.

EU policy should:

1. require transparent, harmonised and digitally available product environmental data;
2. use product information as input to building and infrastructure life-cycle assessment;
3. **set performance requirements, targets or incentives at construction work level**;
4. allow designers, engineers, contractors and clients to choose the most effective combination of materials, products and design solutions;
5. **ensure that public procurement rewards the lowest environmental impact of the completed asset over its life cycle, not only the lowest declared impact of individual products**.
6. **policies should at least consider the function of the product**

This approach would better support climate neutrality, innovation, resource efficiency, affordability, structural safety and the proper functioning of the Single Market.

Conclusion

The construction sector needs decarbonised products, but it also needs better design, efficient use of materials, durability, circularity and whole-life performance. Product-level environmental data is essential, but product-level limits are not the right proxy for sustainable construction, in particular if they are set at the level of the material only.

Low-carbon construction cannot be achieved by looking at products in isolation. It must be assessed at the level of the construction work, where the real environmental, technical and economic performance is determined. The function of a given product shall always be taken into account when assessing its environmental impacts.

The EU should therefore promote a policy framework that rewards the lowest life-cycle impact of buildings and infrastructure, always assessing product performance against this background.

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