Addressing emissions from buildings’ entire lifecycle is key to reducing emissions

The building and construction sector account for more than a third of the EU’s emissions. Emissions go beyond the operation of the building, electricity and heating and cooling – they start even before the construction has begun. Embodied carbon in buildings accounts for all the emissions from the extraction of raw materials to the end of life, including the manufacturing of cement, steel, aluminium, timber, glass, and all construction phases.

‘Whole-life carbon’ emissions consider both the operational and the embodied carbon emissions in a building’s lifecycle. Great efforts have been made in reducing operational emissions, embodied emissions remain insufficiently addressed. Nevertheless, work remains to be done to fully tackle the emissions from the building sector, including those embodied in materials.

1. Decarbonise construction products

Most embodied carbon emissions originate from the product phase before the building is even operational. The largest share of embodied carbon comes from the manufacturing of construction products, followed by emissions stemming from construction activities. Therefore, a robust policy framework and successful implementation is crucial.

The standard manufacturing process of cement (and therefore concrete) and steel are responsible for large CO₂ emissions. Mechanisms that promote emissions reductions, while taking into account the potential environmental or performance trade-offs and the timeline needed to achieve said reductions, are crucial.
**Recommendations**

- **Ensure the implementation of whole-life carbon (WLC) requirements** as outlined in the Energy Performance of Buildings Directive (EPBD).
- **Set strong environmental requirements for cement** in the Construction Products Regulation (CPR) acquis well before the deadline set in the ESPR.
- **Leverage CPR’s disclosure requirements** to improve data collection on embodied carbon levels, in order to set ambitious thresholds in National WLC Roadmaps.
- **An Ecodesign (ESPR) Delegated Act to tackle steel emissions** should be done in a way that retains the value of the steel product for as long as possible, prioritises the use of secondary steel where necessary while still incentivising the production of low-carbon steel.

2. **Create lead-markets for low-carbon products**

It is not enough to decarbonise the supply of construction materials, **demand-side initiatives have a key role to play to enable the creation of markets for low-carbon products**, while reducing the demand for highly polluting ones.

**A holistic strategy to promote the uptake of low-carbon products that considers both supply and demand-side initiatives is key.**

**Recommendations**

- **Harness the purchase power of public buyers** by setting mandatory green public procurement (GPP) criteria, at both sectoral and EU-level legislation, linking to ambitious requirements to be developed in science-based environmental standards.
- **Propose and revise specific legislation on GPP**, such as the Public Procurement Directive and the Clean Vehicles Directive.
- **The upcoming revision of the Taxonomy climate mitigation criteria for construction and manufacturing must include embodied carbon considerations.** This clearly marks what a sustainable building is towards investors, stimulating demand for low-carbon buildings and construction materials.

3. **Looking at the full picture: reduce emissions beyond materials**

While construction products represent the largest share of emissions of a building during its lifecycle, other phases can be tackled to reduce the overall embodied carbon of the building.

**Recommendations**

- **Promote zero-emission construction sites (ZECS).** Empower and enable local authorities to take up electric machinery in construction works.
- **Prioritise renovation** over new buildings to reduce the carbon footprint of the whole building stock.
- **Engage stakeholders** in the design phase as most of whole-life carbon is a direct result of the way the building is design – including the end-of-life emissions.
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