

A scenic view of a town with colorful, multi-story buildings along a riverbank. The buildings have various architectural styles, including gabled roofs and balconies. The river reflects the buildings and the sky. In the background, there are green hills.

REDUCING CARBON EMISSIONS OVER THE LIFE OF A BUILDING: OPPORTUNITIES IN THE 2022 EPBD RECAST

POLICY BRIEFING

SEPTEMBER 2022

The current Commission proposal does not go far enough in addressing operational and embodied carbon emissions on building lifecycle global warming potential (lifecycle-GWP), often referred to as Whole Life Carbon (WLC). Deploying WLC measures in the EU Energy Performance of Buildings Directive (EPBD) recast will be a win-win for energy performance and climate action at the building and industry level. Therefore, a stepwise approach and a clear timeline that go beyond 2030 needs to be set out in the EPBD recast.



A clear stepwise approach and a regulatory roadmap on WLC will need to be explicitly laid out in the revised EPBD:

The current EPBD recast agrees the principle and sequence of regulatory measures with corresponding deadlines for the regulation of WLC, beginning with measurement and disclosure and continuing with limit values set by Member States with the support of the European Commission.

The current EPBD recast gives mandate to the European Commission to undertake the technical and scientific work to develop the methodology and propose the right levels for benchmarks, thresholds and limit values, and

The co-legislators agree during the next EPBD revision on common guiding benchmarks, thresholds and limit values which will be tightened over time in line with the 2050 decarbonisation trajectory.

SECURING CONSTRUCTION AND RENOVATION IN LINE WITH THE EU DECARBONISATION TARGET

Buildings are one of the largest energy consumers responsible for 36% of energy related CO₂ emissions, not including embodied emissions from production, construction, renovation and end-of-life. The building sector is also consuming 50% by weight of the materials we use in EU and is responsible for 30% of the waste we generate. The EPBD recast is set to integrate measures for the decarbonisation of buildings. This move by policymakers rightly acknowledges the key role buildings should play in the clean energy transition and achieving EU climate goals by 2030 and carbon neutrality by 2050.

However, the focus of policy measures, which has been mostly on reducing carbon emissions caused by the use of buildings, needs to be broadened. In addition to considering operational emissions, the embodied carbon associated with the manufacture, transport, maintenance and disposal of building materials and components and the potential to increase the amount of sequestered or stored carbon in buildings is pivotal to align the EU building stock with the 2050 carbon-neutrality objectives.

Most estimates suggest that embodied carbon accounts for about 10% of total yearly greenhouse gas emissions worldwide¹. The relative importance is expected to grow as more buildings are constructed and renovated to higher efficiency standards and could account for over 50% of all emissions from the buildings sector in the near future².

The construction of new buildings and renovation of existing assets will need to happen without further depleting the remaining carbon budget. For the EU building sector this is estimated to be between 12 and 15 Gt CO₂ – which will be used up by sometime in the 2030s unless drastic action is taken now³.

Adding whole-life carbon (WLC) objectives to the existing policy framework would not replace ongoing climate efforts focusing on operational energy efficiency, but rather ensure that efficiency measures are fully brought in line with carbon-neutrality goals and that greenhouse gas emissions are not being simply shifted between lifecycle phases. Integrating WLC measures in the EPBD is a win-win for energy performance and climate action at the building and industry levels. By focusing on both operational energy efficiency and embodied carbon, regulations can reduce household energy bills in the long run and create a major market for both energy saving solutions and low carbon construction and renovation solutions.

Addressing climate impacts and keeping EU decarbonisation on track requires:

Aligning EU building regulations with the remaining carbon budget by taking into account all carbon emissions from the building stock.

Changes in building design and materials selection, including designing with less material and waste, selecting materials with a lower carbon impact and designing buildings for resilience, flexibility or longer lifespan.

Stakeholders from across the built environment to take collective responsibility and understand the environmental impact of their decisions regarding the procurement, design, construction, use and disposal of built assets.

¹ International Resource Panel (2020) Resource Efficiency and Climate Change Report and United Nations (2019) Environment Emissions Gap Report

² Organisation for Economic Co-operation and Development (2019) Global Material Resources Outlook to 2060. Economic Drivers and Environmental Consequences

³ EASAC (2021) Decarbonisation of Buildings

SECURING EUROPEAN INDUSTRY LEADERSHIP IN LOW-CARBON MARKETS

Decarbonising material value chains is essential to both the EU's climate and industrial strategy. In the context of high energy prices and the expectations of economic recession, it is important to maintain investment and innovation in European industry. A means to this end is creating lead markets for innovative low carbon industrial products. While the EU Green Deal emphasises supply-side measures to promote clean industrial technologies (e.g. the Innovation Fund or Carbon Contracts for Difference), strong demand-pull policies are needed to make a robust medium and longer-term business case.

Simultaneously addressing embodied and operational carbon in the EPBD will have the opportunity to reduce (operational) energy demand in buildings, while at the same time creating a major low-carbon market for materials for construction and renovation. It will provide a clear perspective for all actors along key value chains about the potential for scaling the market of green materials beyond narrow individual projects. Without a consistent WLC regulation, low-carbon materials uptake and decarbonisation investments for EU industry, notably energy intensive industry, may not be secured. Furthermore, restricting WLC requirements to new built alone may limit the market incentives and fail to optimise decisions between demolishing and building new or renovating and using existing materials.



Creating major-low carbon markets:

- To address the growing gap between the available supply and demand for low-carbon recycled materials.
- To encourage substantial research and development investment to scale up emerging low carbon technologies that are not yet cost competitive and overcome widespread biases that protect entrenched methods.
- To overcome challenges in comparing the environmental impacts of materials and systems through the use of third-party certifications, such as Environmental Product Declarations.
- To facilitate transparent measurement and quality of data, as well as to allow the construction sector to develop the necessary skills and capacity.

INTEGRATING WLC INTO EPBD RECAST AS A DUAL-ENERGY AND CLIMATE CRISIS SOLUTION: GIVING THE SECTOR AND INDUSTRY THE GREEN LIGHT TO TAKE CLIMATE ACTION

Given the importance of a WLC perspective for both EU climate goals and competitiveness of its industries, the EPBD should indicate the timeline for the introduction of requirements to measure and assess the carbon emissions along the entire lifecycle of buildings followed by the introduction of target values and incremental tightening of limit values. It is pivotal to set a timeline that goes beyond the 2030 cut-off date of most provisions as is the case in the current draft legislation.



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Agreeing on the process within this recast of the EPBD will guide all Member States towards a timely and coherent framework to be able to regulate, based on sound scientific input, the total carbon emissions and climate change contribution of buildings in the EU. The future EPBD revision will subsequently clarify ambition levels and set clear limit values which can support Member States to fully decarbonise their building stocks.



For this to happen, a clear stepwise approach and a regulatory roadmap on WLC will need to be explicitly laid out in the revised EPBD:

- The current EPBD recast agrees the principle and sequence of regulatory measures with corresponding deadlines for the regulation of WLC, beginning with measurement and disclosure and continuing with limit values set by Member States with the support of the European Commission
- The current EPBD recast gives mandate to the European Commission to undertake the technical and scientific work to develop the methodology and propose the right levels for benchmarks, thresholds and limit values, and
- The co-legislators agree during the next EPBD revision on common guiding benchmarks, thresholds and limit values which will be tightened over time in line with the 2050 decarbonisation trajectory.

Waiting for the next revision to set such a roadmap would simply mean losing up to a decade and missing consequently a decade opportunity for EU industry and the climate. The sooner new and existing buildings meet net zero carbon performance, the less difficult it will be to meet the 2050 target of climate-neutrality.

Stepwise approach & clear timeline in the EPBD recast:

- 1.** By 2025, the European Commission and Member States are required to develop a consistent approach for the regulation and implementation of WLC measurement and reporting in the form of a delegated act to the EPBD, based on standards and the LEVEL(s) framework (Articles 7 and 8).
- 2.** By 2025, the European Commission and Member States are required to put in place incentives for data generation, data collection and open data access available to stakeholders.
- 3.** Requirements for Member States to introduce accelerated EU-wide requirements for the measurement and reporting of WLC (lifecycle GWP) for all new buildings, and existing buildings undergoing major renovation to evaluate the climate impacts of buildings by 2027 (Articles 7 and 8).
- 4.** Requirements for Member States to establish a national WLC (lifecycle GWP) decarbonisation roadmap as a guiding policy initiative, based on the EU WLC roadmap now under development and using data and information collected by 2028.
- 5.** Requirements for Member States to establish WLC (lifecycle GWP) benchmarks and thresholds based on technical work undertaken by the European Commission by 2030, that are subsequently linked with financial incentives and the relevant decarbonisation trajectory of the national building stock (Articles 7 and 8).
- 6.** Requirements for Member States to introduce quantified limits by 2033 for the total and annual WLC of construction and renovation of existing buildings that gradually decreases towards carbon neutrality by 2050 at the very latest (Article 7 and 8).
- 7.** Requirements for Member States to promote all major decarbonisation levers to achieve a carbon-neutral building stock by 2050, namely sufficiency, circularity, and non-emitting renewable energy for zero-emissions buildings.

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