

Whole Life Carbon Roadmap 7 December 2023

The European Federation of Engineering Consultancy Associations (EFCA) has member associations in 27 countries, representing more than 10,000 companies from the European engineering consultancy industry and related fields. Based in Brussels, EFCA is committed to facilitating constructive dialogue with European Institutions on issues impacting our industry; and engaging with international stakeholders on shared interests.

EFCA's position in brief

- 1. EFCA supports the Whole Life Carbon (WLC) approach. It is essential to reducing the carbon footprint of the built environment. The scope of regulation needs to be widened, from the current limited focus on operational impact in the use phase, to the inclusion of embodied carbon.*
- 2. Common calculation methods, targets, standards and indicators need to be developed at EU level.*
- 3. The roadmap needs to set out a clear transition path and should generate a greater sense of urgency across the entire European Union. It must have longevity, be updated when necessary and guide the transition for as long as it takes.*
- 4. The roadmap needs to be clear, evidenced, and bold. It must address infrastructure as well as buildings and cover renovation as well as new construction.*
- 5. The implementation of the roadmap requires cross-sectoral, interinstitutional, public and private sector collaboration.*

EFCA is a key stakeholder in the shaping and delivery of the roadmap, representing the engineering community, which will design whole life carbon solutions within the broader perspective of the sustainable built environment.

Whole Life Carbon Roadmap should reinforce existing regulatory framework

The aim of the roadmap should be to reduce the carbon footprint of the built environment, with the participation and commitment of the entire construction ecosystem. In some European countries, where embodied carbon is already part of a policy framework with ever-more restrictive building codes, we are seeing a more balanced approach between

operational carbon measures and sustainable material solutions. Although this is a big step forward, an EU-wide approach would encourage other European countries to follow.

Inevitably, at some point the roadmap needs to be accompanied by reinforcement of existing regulatory measures. The challenge is to avoid creating a framework, which inadvertently leads to counter-productive rigid compliance. Whether or not the design solution is primarily centred on staying within predefined parameters, the goal is to ensure it optimises installations and materials to achieve the best overall design.

Given that some Member States have already introduced regulation on whole life carbon, we believe that it is time to regulate at EU level.

Furthermore, the current framework does not adequately maximise the enormous potential for decarbonising infrastructure. A more rigorous approach to certification and inclusion of infrastructure in key legislative initiatives is required.

Roadmap for entire built environment and entire construction ecosystem

We need to reduce carbon dramatically, quickly and for all construction projects. This of course means that ambition needs to go beyond buildings. Infrastructure generates as much embodied carbon as buildings. Ultimately, we need to aim for carbon-neutral cities, but we need to work with the built environment we already have, not the one we would design if we were starting again. Therefore, the roadmap – at least in the interim - has to aim for smaller scale, individual decarbonisation achievements: renovation, new build, buildings and infrastructure.

Whole life carbon obviously needs to be tackled at material production, design, build and use phase, but it also falls to the clients to demand whole life carbon compliant projects and to the policy makers to shore up the process with effective regulation.

Whole life carbon as part of a broader design approach

Carbon reduction does not start with materials and is not the only important aspect of a sustainable built environment. Engineers think in terms of purpose-driven, context-based and future-proof design.

- **Purpose-driven** means that functionality and users are the basis for any design or development. The design should be as good as it needs to be, but going beyond that is a waste of resources. Whole life carbon should be part of a purpose-driven design approach, which aims, for example, to improve health, well-being and comfort, reduce maintenance, and decrease the total cost of ownership.
- **Context-based** means taking account of the specific circumstances. Standardised design solutions are good for control and speeding up building processes. However, there is no one-size-fits-all. Context-based design is essential to create identity.

Examples: solutions in the north of Europe are not appropriate for the south; a green cooling urban context requires fewer installations and materials than a city suffering from heat stress; a historic building requires a different approach to a new one.

- **Future-proof** means designing for future stages in the life cycle: from maintenance and adaptation to future needs through to end-of-life. It means taking into account different lifespans of design components as well as future unknowns, regarding the availability of materials, climate change, user requirements, etc. Each design should be a step forward in the transition process toward the climate-positive, regenerative, inclusive, healthy, and beautiful built environment of the future. Accountability, using digital technologies, like building passports, is an essential part of future-proof design. It has to be clear what is done: how, why and with what. This information should also assist with future changes.

Related to future-proof design, EFCA supports a bold ambition for whole life carbon. However, the highest ambition is not always the best at project level. For example, zero carbon footprint renovation is possible, but there is a trade-off in terms of living area, which is reduced by the relevant insulation materials, which take up additional space. It is often unrealistic to achieve Class A when renovating older buildings. Such a renovation will need more materials and will not necessarily prevent eventual partial demolition.

It is clear that carbon reduction should not be tackled in isolation. Whole life carbon targets are part of future-proof design but need to be aligned with purpose and context as well. Customisation must be allowed and accepted as there is no standard solution. Moreover, there is more than one way to achieve a good result. Therefore, EFCA supports whole life carbon measures that are proportionate. **The test of this principle is to ask whether the impact and result justify the effort and the cost of measurement of the carbon footprint, also in relation to the broader sustainability context.**

The Policy Context

Whole life carbon is not a stand-alone issue. It has to be handled alongside related policy areas. The roadmap might need a number of interim milestones, but should take a long-term view. Examples of other policy initiatives, for which a joined-up approach is needed include the following:

- **Construction Products Regulation:** *Connecting whole life carbon measurement to material passports, incorporating relevant indicators, is crucial. The current challenge lies in the overall quality and reliability of data, especially concerning products. Some assumptions made by Declarations of Performance are not adequately or independently validated, such as insulation materials from the petrochemical industry. For example, an Energy Performance Declaration issued in 2020, providing Global Warming Potential figures based on 2019 or earlier, remains valid until 2025. Despite improvements in the accuracy and timeliness of data used in Life Cycle Assessments, the dynamic energy market context underscores the rapid aging of data.*

- **Energy Performance in Buildings Directive:** *The European Commission's proposal for a recast of the EPBD provides that Member States must ensure that the life-cycle Global Warming Potential of new buildings is calculated in accordance with Annex III and disclosed in the Energy Performance Certificate. Given the strong synergy between whole life carbon and the Energy Performance of Buildings Directive, we propose to incorporate minimum requirements for CO2 footprints in the next recast of the Directive.*
- **Taxonomy:** *In alignment with the technical screening criteria of the EU's sustainability classification system for economic activities, the built environment sector must adhere to various environmental goals by employing life-cycle assessment and circularity metrics. New buildings are assessed for eligibility based on climate change mitigation, while both new construction and renovation can meet criteria through adherence to the principles of the circular economy. This involves the calculation of Global Warming Potential at each stage of a building's life cycle, with reporting carried out using Level(s). The incorporation of Level(s) should be explicitly highlighted in the context of climate change mitigation and adaptation. To ensure widespread adoption of Level(s), it is essential to translate the framework into all official EU languages.*

In addition to relevant policy initiatives, considerable investment is being made, both at EU and national level into research and other project activities, as well as voluntary codes of practice. These address aspects of design and construction, including:

- **Smart buildings and cities:** *Any Whole Life Carbon Roadmap needs to link to these initiatives.*
- **Circularity and the need to reduce materials use:** *The renovation of buildings for energy efficiency involves a trade-off. The requirement for substantial additional materials, like insulation and secondary glazing, may result in an increase rather than a decrease in overall material usage. Additionally, the challenge intensifies when recycled materials, lacking harmonised standards or acceptance from clients and insurers due to unverifiable quality, lead to the use of virgin materials instead.*
- **Biobased material:** *Construction-stored carbon, using biobased materials, and especially using residual flows and fast-growing vegetation, are an important part of the whole life carbon solution and essential for the resource transition. However, care has to be taken over the broader implications this might have when the use of these materials becomes standard practice. It can be part of a more sustainable ecological agricultural landscape, but it can also lead to the opposite. This will require a clearer European policy framework.*

How will we know when we have succeeded?

Targets and indicators are only a means to an end, not the goal itself. Moreover, any whole life carbon indicators should not be seen in isolation. While low embodied carbon is important, it is not the only measure of a sustainable built environment. The relevant indicators should align with existing instruments, especially circularity indicators, and provide the necessary level of detail. Moreover, data for indicators will be supplied by different actors in the process. The need for standardised data is therefore crucial. It needs to be accurate, comparable, available and relevant. Otherwise, the effectiveness of the Whole Life Carbon Roadmap and any related regulation, will be impossible to evaluate.

To be effective, whole life carbon measurement needs to achieve accountability. It needs to be simple, with a standardised methodology; and manageable. The indicators could cover a range, from mandatory strict indicators with clear targets to optional indicators. As different regions of the European Union have varying potential in terms of whole life carbon targets, with some countries having already made considerable progress, national differences need to be taken into account. We should also learn the lessons from previous targets set for the built environment, which have been lamentably missed, for example, the ambition for the annual renovation rate of 3%, for public buildings, which is a feature of the Energy Efficiency Directive.

Conclusion

In summary, EFCA supports the development of a comprehensive EU Whole Life Carbon Roadmap to reduce the carbon footprint in the built environment, with the participation and commitment of the entire construction ecosystem. The roadmap should extend beyond buildings, encompassing infrastructure and cities. Emphasising purpose-driven and future-proof design, EFCA advocates for flexibility and alignment with related policies. Success hinges on standardised data, accountability, and a holistic approach, paving the way for a sustainable built environment.