European Insulation Manufacturers Association

EURIMA Position Paper on the revision of the Energy Performance of Buildings Directive

November 2021

Executive summary

The Renovation Wave has the potential to improve the health and wellbeing of EU citizens, create jobs and accelerate Europe's post-Covid recovery. It is an indispensable part of the European Green Deal and it is clear that EU climate neutrality cannot be achieved without addressing Europe's building stock.

To meet the objectives of the Renovation Wave, the role of the EPBD must be transformational. The EPBD has to create a paradigm shift whereby deep renovations become the norm and the rate of renovation increases to levels not witnesses in Europe since the 1950s.

This paper outlines how the EPBD should be revised to make this happen. Eurima's recommendations are grouped in three broad categories:

1. **Introduce new regulatory measures to increase the rate and depth of renovation:**
    a. Establish an EU framework for Minimum Energy Performance Standards (MEPS)
    b. Introduce a Deep Renovation Standard

2. **Strengthen existing requirements and supporting tools:**
    a. Align Long-Term Renovation Strategies with the new 2030 & 2050 climate objectives
    b. Raise the quality of Energy Performance Certificates (EPC) and open EPC to real performance metrics
    c. Complement EPC with Building Renovation Passports
    d. Update the methodology on cost-optimality
    e. Revise Nearly Zero Energy Buildings (NZEB) definitions
    f. Expand the availability of training and certification programmes

3. **Establish an EU-wide reporting framework for whole life carbon emissions of buildings**

Introduction

The current EU building stock

There are currently 210 million buildings in the EU that together use more energy and emit more CO2 than any other sector of the EU economy. Without addressing the EU's biggest CO2 emitters – buildings – the 2050 climate neutrality objective is unachievable[1]. Most of the buildings in 2050 already exist today. In fact, over 94% of today's buildings will still be standing in 2050, since the rate at which buildings are demolished is very low[2]. The majority of these buildings are old and energy-inefficient, with over half of them in the three lowest energy classes (E, F and G)[3].

As a result, around 50 million EU citizens are currently living in leaky houses, with no or insufficient insulation, that they cannot afford to properly heat or cool[4]. This has a significant impact on their health, as up to 90% of our time is spent indoors. Indoor cold in Europe is linked to over 38,000 excess deaths in winter according to the World Health Organisation[5]. Indoor dampness causes 15% of new childhood asthma in Europe[5]. Summer comfort is an increasing concern with temperature changes in all geographies. In office buildings alone, the poor state of the building stock results in an annual productivity loss of €500 billion economy-wide. Buildings currently use 61% of all imported gas, costing the taxpayer €1 billion/day. Conversely, for every 1% improvement in energy efficiency across Europe, EU gas imports drop by 2.6%. Finally, the current building stock is not well equipped to deal with unavoidable impacts of climate change, with floods, earthquakes and forest fires projected to rise in frequency in upcoming decades.

At the core of these issues is a lack of energy efficiency. Renovation, and in particular insulation, is needed to create healthier, safer and more productive environments for EU citizens.

A Renovation Wave

The EU's Renovation Wave strategy acknowledges that at the current low rate of energy renovation (around 1%), it would take over a century to reach a highly energy-efficient and decarbonized building stock. This is at odds with the EU's objective to achieve climate neutrality by 2050 at the latest.

The average renovation rate will need to more than triple to stay on track towards 2050 and to tap into the building sector's potential to deliver on the EU's increased 2030 climate target. Meanwhile, the average depth of renovations will have to increase from the current 0.2% to 3% by 2030[6]. Accordingly, deep renovation will have to become the rule, not the exception, applying to at least 70% of renovations taking place by 2030[6].

All of this suggests that the impact of the EPBD revision must be transformational. Whilst supporting measures like financing, technical assistance, training and information tools will be vital in this transition, it is clear that new ambitious regulatory tools are needed to kick-start the Renovation Wave. That is why the first priority of this EPBD revision should be to introduce Minimum Energy Performance Standards (MEPS) and a Deep Renovation Standard (DRS) for existing buildings.

[1] Climact (2018) The key role of energy renovation in the net-zero GHG emission challenge, see here
[2] European Commission (2016) SWD: Evaluation of Directive 2010/31/EU on the energy performance of buildings, see here
[3] BPIE (2017) Factsheet: 97% of buildings in the EU need to be upgraded, see here
[4] European Commission (2018) Launch of the EU Energy Poverty Observatory, see here
[5] WHO (2011) Environmental burden of disease associated with inadequate housing, see here
[6] BPIE (2020) Contributions from the building sector to a strengthened 2030 climate target, see here

1. Introduce new regulatory measures to increase the rate and depth of renovation

Minimum Energy Performance Standards (MEPS) for existing buildings

Recent studies by RAP[7] and CE Delft[8] show that Minimum Energy Performance Standards (MEPS) for existing buildings can stimulate the volume and depth of renovation, which is essential for the EU to meet its climate targets and recover from the crisis. The visibility enabled by MEPS will also help the renovation supply chain, together with public and private finance, in getting organised beyond the short term, developing solutions and upskilling the workforce to reach a 3% renovation rate.

Whilst the short-term objective of MEPS should be to target the worst-performing buildings, the framework should provide legal certainty with a proper notice on when the requirements will be increased to a higher energy class. By mapping such a trajectory, MEPS can already serve to support deep renovation as building owners will be incentivised to prepare for tighter future compliance requirements well in advance, provided that a supporting framework is in place to reward those opting for deep renovation instead of merely meeting current MEPS.

MEPS can be designed and have a role to play for all building segments, and should be designed according to their specificities. Member States should have the flexibility to define the appropriate level of ambition for different building segments, taking into account local market characteristics (e.g. possibility to have more ambitious early-stage requirements on certain segments like social housing or commercial buildings).

The rent/sale trigger points are necessary, and so are other trigger points (e.g. technical works performed). But to limit the deployment of MEPS to such trigger points would not provide a sufficient renovation accelerator to the market. Single-stage MEPS with one, firm implementation date risk creating lock-in effects. To avoid this, MEPS should be accompanied by a trajectory that shows how the standard will rise in the future and be sufficiently ambitious to deliver a climate neutral building stock by 2050. Therefore, a rising standard or 'staged MEPS' based on trigger points and a final date is preferable:

- Trigger points ensure that some benefits of MEPS will start to materialise relatively quickly, whilst a set date further afield for all buildings would ensure that most building owners have the flexibility to plan ahead and renovate at an optimal time to suit their needs. This will also help financial institutions set appropriate requirements when providing funding for renovation.
- The combination of the three tools (trigger points, final date & funding) can then be adjusted for each building segment. Trigger points combined with a long timeframe (e.g. 2025 or 2030) as well as access to funding and technical assistance could be very relevant for the residential sector, whilst a shorter timeframe is appropriate for those buildings identified in the Renovation Wave as segments where projects can be aggregated more easily and expedited more quickly (e.g. social housing, commercial buildings).
- Launching MEPS should not lead to changing EPC indicators or calculation methodologies in a way that artificially reduces the number of buildings covered by the initial MEPS

[7] RAP (2020) Filling the policy gap: Minimum energy performance standards for European buildings, see here; RAP (2021) Next steps for MEPS: Designing minimum energy performance standards for European buildings, see here
[8] CE Delft (2020) Bringing Buildings on Track to Reach Zero-Carbon by 2050, see here

requirements. The added value of MEPS in terms of alleviating energy poverty would then also be jeopardized.

- "Lock-in" effects need to be avoided: communications on MEPS should explain that MEPS thresholds are only a starting point in a journey towards a Deep Renovation Standard.

An EU Deep Renovation Standard

Currently, there is no EU-level definition for what constitutes a 'deep renovation'. Some Member States have adopted national definitions based on widely varying criteria, while most Member States have no definition at all. Whereas the EU-level political ambition on deep renovation is clearly outlined in the Renovation Wave, the national policy ecosystem that is supposed to deliver on this ambition is fragmented, incoherent and ineffective. Consequently, deep renovation is only a reality in a marginal number of cases.

The EPBD revision can address this by introducing a common deep renovation definition and enshrining an overarching Deep Renovation Standard throughout the Directive to create the necessary link between political ambition and delivery mechanisms.

In previous communications on deep renovation, the Commission has often referred to the proxy of "60% primary energy savings". However, this criterion does not take into account differences in the typology, climatic zone or pre-renovation state of the building. Depending on these factors, the appropriate level of primary energy savings that should stem from deep renovation ranges between 60% and 90%. At the same time, buildings that already maintain a higher-than-average level of energy performance (e.g. 120 kWh/m²/year) could reach a high level of performance without meeting the 60% threshold. An alternative approach is to design a standard based on maximum energy needs, defined as the maximum final energy consumption level of the building, expressed in kWh/m²/year. 90% of experts surveyed by the Global Buildings Performance Network considered that energy performance after a deep renovation should be below 80 kWh/m²/year[9]. A definition based on a range for maximum energy needs (e.g. 60-80 kWh/m²/year) would provide Member States the necessary flexibility to set varying thresholds that take into account different climatic zones.

But introducing a definition is only the first step in enshrining a Deep Renovation Standard in the EPBD. The entire supporting framework for renovation needs to be rebalanced to make deep renovation the default, not the exception. Long-term Renovation Strategies (Art.2 & 3), Energy Performance Certificates, Building Renovation Passports and One-Stop-Shops (Art.29 & 20), financing and technical assistance (Art.10 & 22) are just some of the tools that should incorporate the Deep Renovation Standard:

- Long-Term Renovation Strategies (LTRS) should outline the pace at which the rate of deep renovations will evolve across different building segments by set milestones (e.g. 2030, 2040), and how specific measures and policies outlined in the LTRS will contribute to deliver this rate.
- The Energy Performance Certificate should indicate where the Deep Renovation Standard (DRS) lies on the scale of energy performance (i.e. to show how far the building owner is from achieving a DRS) and Building Renovation Passports should provide a roadmap for each building to attain this standard.

[9] GBPN (2013) What is a deep renovation definition, see here

- Every Member State should have a dedicated financing scheme promoting quality renovations in a progressive way. The rule should be simple: the magnitude of financial support should be based on the level of performed energy savings achieved through renovation. Financing support for single measures should become conditional on the existence of a BRP, ensuring that any measure is part of a plan to deeply renovate the building.

2. Strengthen existing requirements and supporting tools

Align Long-Term Renovation Strategies (LTRS) with the new 2030 and 2050 climate objectives

Member States should update their LTRS by no later than 2024 to align the plans with the new 2030 and 2050 climate objectives and the Fit-For-55 Package. The updated plans should explicitly outline the building sectors contribution to the achievement of the country's greenhouse gas reduction targets and 2030 energy efficiency target.

To facilitate this, the Commission should provide Member States with a template for LTRS (common measurable progress indicators, milestones, and baseline year) to simplify drafting, reporting, and monitoring. This will allow the Commission to better analyse, compare and deliver EU wide milestones and progress indicators for 2030, 2040 and 2050. The Commission should provide recommendations on how to improve LTRS and undertake a gap-filling exercise, both on ambition and delivery. This way Member States will benefit more directly from the Commission's support in drafting LTRS, which would be particularly useful for guidance on absorption of EU funds and providing technical assistance.

LTRS provisions in the EPBD should require Member States to clarify the pace and depth of renovation in different segments of the building stock, providing an accurate mapping of the status quo and potential for emissions reduction in each segment of the building stock (e.g. public buildings, social housing, owner-occupied residential, private-rented residential, commercial, industrial). This would enable Member States to develop segment based renovation strategies, outlining incentives and regulatory measures specifically designed for each building segment, taking into account the segment's specific characteristics and barriers to renovation (e.g. split incentives between tenants and landlords in the case of the private-rented residential buildings). The number of buildings to be renovated in each segment should be announced and monitored.

Member States should clarify in their LTRS the expected contribution of MEPS and other policies to decarbonising each building segment. More solid LTRS are a prerequisite to designing effective measures, including regulatory ones. Digital technologies should be used to perform advanced mapping of the national buildings stock and to accelerate the preparation and implementation of renovation programmes.

Raise the quality of Energy Performance Certificates (EPC)

Whilst energy performance calculation methodologies vary widely across the EU-27, the principles of acceptable reproducibility and accuracy should be common objectives of any EPC scheme. To this day, most Member States favour simple, low-cost surveys that can be carried out quickly but fare poorly in terms of accuracy and reproducibility – two factors that are key for ensuring the credibility of EPCs and the tailored recommendations stemming from this data.

EPCs should build upon more harmonised, comparable and solid asset based calculations, which

ensure that the building fabric is optimised to reduce thermal heat losses in new and renovated buildings. At the same time, given that real performance solutions are increasingly available, real performance metrics should progressively complement the calculated performance of EPCs. To ensure quality, this should be based on an EU certification scheme for energy efficiency meters in buildings that can measure actual energy performance improvements, as was announced in the Renovation Wave strategy.

In order to effectively serve its purpose, an EPC needs to provide reliable information and be trusted by all parties involved. On-site visits address both of these factors as reliability is improved and evidence suggests that an on-site visit – and the corresponding opportunity to interact with the assessor – positively correlates with the perceived quality and reliability of the recommendations and the likelihood that they will be implemented[10]. The qualification of certifiers, including their ability to communicate outcomes and proposed measures to the building owner in a clear and convincing manner, is another important factor in determining the quality of the EPC and the uptake of recommendations.

EPCs and MEPS should be regarded as two fundamental, mutually reinforcing components of the EPBD. High quality EPCs with reliable information on building performance are crucial to the design and successful rollout of MEPS. EPCs and MEPS are also mutually reinforcing in terms of consumer awareness and compliance: MEPS based on EPC data could provide a welcome boost to quality enhancement and EPC adoption, particularly by third parties like real estate agents, banks, contractors etc. Meanwhile, the deployment of MEPS provides a solid but urgent rationale for upgrading the quality of EPCs. MEPS can serve as a regulatory tool for expanding the coverage of EPCs and ensuring compliance.

Complement EPCs with Building Renovation Passports (BRP)

BRP should detail the buildings' trajectory towards meeting the Deep Renovation Standard or nZEB level, and recommend the preferred order and combination of measures, in accordance with the Energy Efficiency First principle.

BRPs should be digital and user friendly, referencing essential health & comfort benefits of the renovation steps. Such tailored renovation advice to building owners will also ensure adequate project planning, coordination of the renovation steps and proper design of measures.

EPCs – in combination with BRPs – can serve as an effective tool for increasing awareness of available public financing options such as availability of subsidies, preferential loans as well as innovative financial solutions (e.g. energy performance contracting, on-bill financing). Integrating information on financial support in EPCs, and especially BRPs, can help to persuade building owners to undertake an energy renovation and steer investment towards deep renovation[10]. Whilst the information on financing options contained in an EPC might be limited, it can serve a crucial bridging role between the energy performance assessment and a more thorough engagement with public authorities (e.g. one-stop-shops) and financial institutions to develop a tailored renovation package.

As EPC methodologies are upgraded to produce more accurate assessments, the cost of EPCs may rise correspondingly. Thus, to align the EPBD revision with efforts to alleviate energy poverty, Member States should consider subsidies for EPCs and BRPs. Schemes integrating subsidies for obtaining an EPC or BRP in combination with one or two energy efficiency measures should be supported, especially for vulnerable dwellings.

[10] X-tendo Project (2020) Energy Performance Certificates: assessing their status and potential, see here

Update the methodology on cost-optimality

Article 4 of the EPBD establishes minimum energy performance requirements (MEPR) for new buildings and existing buildings that undergo major renovations. These requirements are determined by nationally set methodologies, which in turn are based on the Commission's 2010 Delegated Regulation on Cost-Optimality. A guidance note on implementing the cost-optimality methodology was subsequently published in 2012. Both the delegated regulation and guidance document must be urgently updated and aligned with the EU's 2050 climate neutrality target.

The scope of factors considered in the methodology needs to be widened to fully reflect the multiple socio-economic benefits of energy efficiency. For instance, neither the health benefits, nor the productivity gains of improved indoor environmental quality are currently taken into account. The current methodology also overlooks avoided costs of carbon emissions and other positive externalities of energy efficiency. Whilst the Commission's guidance document addresses the costs of ETS allowances, it reflects a carbon price far below that of recent years and far below what is projected for the next decade. Recent estimates suggest the EU's carbon price could reach €90 as early as 2030[11].

Beyond these incremental improvements, the Commission should also consider how the cost-optimal methodology can be reformed more fundamentally to incorporate climate-neutrality as a guiding principle. Cost-optimality as a factor in decision-making on building performance requirements can still serve a useful purpose, but only when weighing up options that are all aligned with a trajectory towards a climate neutral building stock.

Finally, Article 4 should be revised to clarify that Member States must ensure that their national MEPR methodologies for new buildings are no less ambitious than NZEB level.

Revise Nearly Zero Energy Buildings (NZEB) definitions

As outlined in the Commission's October 2020 progress report on the uptake of NZEB[12], in many EU countries, the performance benchmarks established for NZEB still fall short of the recommendations provided in the Commission's 2013 guidance 'Towards nearly zero-energy buildings'. Given this lack of follow-through and the carbon lock-in risks associated with insufficient NZEB standards, the EPBD should require that national NZEB definitions set maximum thresholds for heating and cooling energy needs at least at the levels identified for different climatic zones in the Commission's 2016 NZEB guidelines. 'Energy need' is the main indicator of the quality of the energy concept of the building and is already in line with the EPBD methodology and standards used to support the directive.

As NZEB definitions become increasingly mainstreamed, for instance via the new EED Art.6 provisions that require renovation of public buildings to NZEB level, it will become even more important to ensure that national NZEB definitions are not diluted to meet such requirements. Setting a performance 'floor' for NZEB based on maximum energy needs will also help to increase the share of renewables in the overall energy mix, reduce peak demand and provide systemic efficiency to the grid, thereby protecting those living in the worst performing buildings from disproportionate cost increases. Reducing energy needs through good building envelopes remains the best solution to ensure energy security and to reduce energy poverty

Eventually, the NZEB standard should be transformed into a Zero Energy Buildings (ZEB) standard

[11] ICIS (2021), European chemicals industry faces €1.5bn carbon bill, see here
[12] European Commission (2020), Comprehensive study of building energy renovation activities and the uptake of nearly zero-energy buildings in the EU, see here

with more ambitious thresholds for maximum energy needs. In the long-run, NZEB buildings should become 2050 climate neutral ready buildings from a carbon perspective. But in order to incorporate whole life carbon (WLC) thresholds in the EPBD, first a common EU reporting framework for WLC emissions in needed.

Expand the availability of training and certification programmes

Shortages of skilled workers are already causing delays in carrying out energy renovations in a number of EU countries. If left unchecked, this issues threatens to derail the Renovation Wave. As the average depth of renovations increases, it becomes even more important to ensure the availability of training and certification programmes, as insufficient numbers of qualified professionals in the renovation sector lead to poor workmanship, thereby reducing energy savings attained and generating risks of carbon lock-in.

To address this, the Commission should introduce a new article in the EPBD that requires Member States to ensure that a sufficient number of high-quality training programs and certification schemes are made available, corresponding to the projected rise in demand for these sectors.

Appropriate progress indicators for expanding training and certification programmes should be outlined in the LTRS. Without putting in place dedicated measures to increase the availability of qualified workers well in advance, Member States run the risk of failing to meet their LTRS objectives, as it takes several years to develop large-scale certification programmes and mainstream their uptake.

3. Establish an EU reporting framework for whole life carbon emissions of buildings

Addressing whole life carbon (WLC) emissions of buildings

Whilst the main objective of the upcoming EPBD revision is to increase the rate and depth of renovation, the EPBD's long-term goal is to reach a highly energy-efficient and decarbonized EU building stock by 2050. This can only be achieved if European and national policies include a whole life carbon (WLC) approach to tackling building emissions, which requires a holistic consideration of both the operational carbon of buildings (emission emitted during the use of the building) and embodied carbon of buildings (emissions associated with construction materials and products as well as the processes carried out prior and after the use of the building).

The EPBD is the only EU legislative tool directly aiming to regulate the energy performance of buildings, thereby reducing the operational carbon of buildings, where, as explained above, further progress is still needed. Meanwhile, embodied carbon of buildings is currently mainly tackled by voluntary industry initiatives and the EU ETS, which reduces life cycle emissions of some of the most energy intensive building materials (e.g concrete, steel, aluminium and glass). Market actors can account for the **environmental performance of their products** using internationally recognized Environmental Product Declarations (EPDs) – a methodology developed by CEN and covering the extraction of the raw materials, manufacturing, transport, installation at the building and end of life of the products. To support market actors and Member States in addressing **environmental impacts of buildings**, including embodied carbon, and developing related policies, the European Commission has created a European sustainability assessment and reporting framework known as

LEVEL(s). This framework brings together all relevant European standards from both product level – EN15 804+A2 (EPDs) – to building level with EN15 978, to provide a common language for sustainability performance of buildings.

To respond to the need to tackle whole life cycle emission of buildings, the Commission should ensure that this voluntary methodology evolves into a harmonised framework with mandatory calculation tools and requirements addressing the embodied carbon of buildings as part of the upcoming EPBD revision and other legislative proposals, keeping EN standards at its core.

In this context, Eurima welcomes the Commission's initiative to develop a 2050 whole life cycle performance roadmap to reduce carbon emissions from buildings. This exercise should explore how the scope of the EPBD should evolve over the coming decades based on a sound EU-wide methodology in line with mandatory EU standards in order to deliver a decarbonised building stock by 2050.

Whilst the EPBD can certainly play a role in reducing embodied carbon in buildings, it would be detrimental to repurpose all of its instruments to serve this goal. The Commission should carefully assess which tools in the EPBD are most appropriate for incorporating carbon metrics, what should be the first steps in introducing such changes and which segments of the building stock are best placed to act as front-runners.

A staged approach:

According to the IEA, the immediate challenge for implementing policies that address the embodied emissions of buildings is the lack of data on building-level emissions[13]. The EPBD could tackle this by introducing reporting obligations, supplemented by a harmonised EU methodology for calculating building-level emissions based on LEVEL(s) and existing EU standards (EN15 804+A2; EN15 978).

Such requirements could eventually pave way for more impactful measures such as benchmarking and targets setting. Timely introduction of disclosure obligations ahead of binding targets creates awareness, regulatory and investment certainty, and allows companies to develop the necessary skills and practices, which in turn helps to create a market for low carbon products and approaches.

The challenges in creating such a reporting framework are proportionately greater with respect to embodied carbon, when compared to the operational side, as the latter holds a more robust evidence base from the outset. Whilst ultimately a whole life carbon approach should lead to a single reporting framework, in the 2020s it would be more effective to roll-out two parallel streams for operational and embodied carbon.

Identifying the front-runners:

To identify which building segments should be covered by the reporting framework, a number of factors should be considered: (1) new buildings vs renovations; (2) public vs private buildings; (3) large buildings vs buildings of all sizes; (4) residential vs non-residential.

Given the lower operational carbon of new buildings, embodied carbon typically represents a proportionately greater share of emissions in new buildings when compared to existing ones. New construction projects also enjoy some inherent advantages in terms of capacity to fulfil reporting obligations (e.g. existing data collection practices, availability of skilled workforce and product information).

[13] IEA (2021), Net Zero by 2050, see here

New public buildings and large non-residential buildings (>5000 m²) could serve as front-runners, before the framework is expanded to all new buildings. Such a framework could also be applied to major renovation projects, which follow the same planning, design, construction and commissioning path as new constructions.

Timing & scope:

Given the current lack of data on embodied emissions of buildings, it is difficult to judge what might constitute appropriate milestones on the road to 2050. The World Green Building Council (WGBC) recommends that at a global level all new buildings and renovations should have at least 40% less embodied carbon in 2030 when compared to 2020[14]. Meanwhile, leading cities like Oslo, Los Angeles, Mexico City and Budapest have pledged to achieve a 50% reduction by 2030[15] and leading companies in the building and construction sector will compensate for all residual upfront emissions as of 2023[16].

Whilst these public and private sector front-runners show what is possible and provide some indication of the level of ambition required, lack of comprehensive research and data collection impedes our ability, to date, to set milestones for EU countries and the EU as a whole. Therefore, comprehensive data collection is required to better understand the level of embodied emissions of the existing EU building stock, and a modelling exercise is needed to project how embodied emissions of buildings must evolve over upcoming decades to achieve a climate neutral building stock by 2050. This analysis should define clear scenarios for policymakers to consider, and cover existing standards and rules, quality of verifiers, software reproducibility and database interoperability.

Such an exercise could be carried out by the Joint Research Centre and would inform the European Commission's 2023 Whole Life Cycle Performance Roadmap, which is expected to set the overall vision for reducing whole life carbon emission of EU buildings. This Roadmap should define the scope of embodied building emissions to be addressed, map the potential for reduction across different building segments, establish national trajectories and identify the role EU legislative tools can play to achieve this, notably building regulations (EPBD) in combination with product legislation (CPR) and the impact of carbon pricing (ETS).

The 2021 revision of the EPBD represents only the first legislative milestones to be considered on the way to 2030, and will be carried out well before any comprehensive research can be undertaken. Further revisions of the EPBD will likely take place in 2026 and 2030. The timeline below outlines a potential sequence of actions that would gradually incorporate carbon metrics in the EPBD, whilst avoiding any unnecessary delays to the 2021 revision, which should remain primarily focused on delivering savings in operational carbon by reducing energy needs for heating and cooling in line with the Energy Efficiency First principle.

[14] WGBC (2019), Bringing Embodied Carbon Upfront, see here
[15] C40 Cities (2020) Press Release: Oslo, Los Angeles, Mexico City and Budapest Commit to Clean Construction, see here
[16] WGBC (2021) The Net Zero Carbon Buildings Commitment, see here

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THE ROAD TO ZERO EMBODIED CARBON BUILDINGS

The realisation of all steps outlined in this timeline rests on the t**ranslation of LEVEL(s) and existing EU standards (EN15 804+A2; EN15 978) into a harmonised EU methodology** for calculating carbon emissions of buildings. In anticipation of this common EU methodology, LEVEL(s) and existing standards can already be used for reporting on the front-runner building segments identified below.

The broader vision for decarbonising Europe's building stock will be outlined in the Commission's 2023 Whole Life Cycle Performance Roadmap (EC Roadmap), which should define the scope of embodied building emissions to be addressed, map the potential for reduction across different building segments, establish national trajectories and identify which EU legislative tools can help to achieve this. **Appropriate thresholds for 'minimum targets 1' and 'minimum targets 2' should be determined as part of this exercise.**

EPBD REVISION		2021	2026	2030
NEW BUILDINGS	Public Buildings	REPORTING USING LEVEL(s) ▼ REPORTING & BENCHMARKING USING HARMONISED EU METRICS BASED ON LEVEL(s)	MINIMUM TARGETS 1 AS DEFINED IN EC ROADMAP	MINIMUM TARGETS 2 AS DEFINED IN EC ROADMAP
	Non-residential Buildings >5000 M²	EPBD MANDATES PILOT PROJECTS TO COLLECT & REPORT DATA	REPORTING & BENCHMARKS FOR ENTIRE BUILDING SEGMENT	MINIMUM TARGETS 1 AS DEFINED IN EC ROADMAP
	Residential & other buildings <5000 M²	—	EPBD MANDATES PILOT PROJECTS TO COLLECT & REPORT DATA	REPORTING & BENCHMARKS FOR ENTIRE BUILDING SEGMENT
RENOVATIONS	Public Buildings	EPBD MANDATES PILOT PROJECTS TO COLLECT & REPORT DATA	REPORTING & BENCHMARKS FOR ENTIRE BUILDING SEGMENT	MINIMUM TARGETS 1 AS DEFINED IN EC ROADMAP
	Non-residential Buildings >5000 M²	EPBD MANDATES PILOT PROJECTS TO COLLECT & REPORT DATA	REPORTING & BENCHMARKS FOR ENTIRE BUILDING SEGMENT	MINIMUM TARGETS 1 AS DEFINED IN EC ROADMAP
	Residential & other buildings <5000 M²	—	EPBD MANDATES PILOT PROJECTS TO COLLECT & REPORT DATA	REPORTING & BENCHMARKS FOR ENTIRE BUILDING SEGMENT

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THE ROAD TO ZERO OPERATIONAL CARBON BUILDINGS

Given that EU countries already possess a more robust evidence base on operational carbon emissions of buildings, when compared to embodied carbon emissions, a more ambitious timeline is envisaged – **legislation mandating Zero Operational Carbon Buildings should be introduced within the next decade.**

As operational carbon represents over 80% of EU buildings' CO_2 emissions, a WLC approach that is aligned with the Energy Efficiency First Principle must **prioritise the reduction of heating/cooling energy needs.** Whilst new buildings can act as front-runners, the greatest savings potential lies with the existing building stock, which can only be addressed with ambitious measures to drive deep renovation.

EPBD REVISION		2021	2026	2030
NEW BUILDINGS	Public Buildings	REPORTING USING LEVEL(s) ▼ REPORTING & BENCHMARKING USING HARMONISED EU METRICS BASED ON LEVEL(s)	MINIMUM TARGETS AS DEFINED IN EC ROADMAP	EPBD ESTABLISHES COMMON STANDARD FOR ZERO OPERATIONAL CARBON BUILDINGS
	Non-residential Buildings >5000 M²	REPORTING USING LEVEL(s) ▼ REPORTING & BENCHMARKING USING HARMONISED EU METRICS BASED ON LEVEL(s)	MINIMUM TARGETS AS DEFINED IN EC ROADMAP	EPBD ESTABLISHES COMMON STANDARD FOR ZERO OPERATIONAL CARBON BUILDINGS
	Residential & other buildings <5000 M²	EPBD MANDATES PILOT PROJECTS TO COLLECT & REPORT DATA	REPORTING & BENCHMARKS FOR ENTIRE BUILDING SEGMENT	MINIMUM TARGETS AS DEFINED IN EC ROADMAP
RENOVATIONS	Public Buildings	EPBD MANDATES PILOT PROJECTS TO COLLECT & REPORT DATA	REPORTING & BENCHMARKS FOR ENTIRE BUILDING SEGMENT	MINIMUM TARGETS AS DEFINED IN EC ROADMAP
	Non-residential Buildings >5000 M²	EPBD MANDATES PILOT PROJECTS TO COLLECT & REPORT DATA	REPORTING & BENCHMARKS FOR ENTIRE BUILDING SEGMENT	MINIMUM TARGETS AS DEFINED IN EC ROADMAP
	Residential & other buildings <5000 M²	EPBD MANDATES PILOT PROJECTS TO COLLECT & REPORT DATA	REPORTING & BENCHMARKS FOR ENTIRE BUILDING SEGMENT	MINIMUM TARGETS AS DEFINED IN EC ROADMAP