



EUROPEAN ALLIANCE TO
SAVE ENERGY

Creating an Energy-Efficient Europe

Review of the Energy Performance of Buildings Directive

Recommendations to shape the decade of buildings renovations



E3G





REVIEW OF THE ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE:
RECOMMENDATIONS TO SHAPE THE DECADE OF BUILDINGS RENOVATIONS

APRIL 2021

The European Union has committed to a net zero economy by 2050, and to reach at least -55% greenhouse gas emissions (GHG) reductions by 2030.

To get there, the decade 2020-2030 must be the witness of an unprecedented wave of renovations resulting in buildings emissions reduction by 60% by 2030. It is as simple as that.

Reducing energy demand and increasing energy efficiency in the buildings sector is a prerequisite for achieving the European Union's energy and climate objectives. Currently around 75% of the building stock is energy inefficient, yet almost 85-95% of today's buildings will still be in use in 2050¹. Only 1% of European buildings undergo energy renovations each year and on average the energy saved through renovations is just 9% in homes and 16% in commercial and industrial buildings^{2,3}. The yearly deep energy efficiency renovation rate barely reaches 0,2% for both residential and non-residential buildings. At this pace, cutting carbon emissions from the building sector to net-zero would require centuries⁴. Last but not least, 75% of buildings energy consumption is still based on fossil fuels⁵.

The renovation rate is therefore far too low considering the environmental challenges and the economic opportunities that lie ahead. The Renovation Wave strategy acknowledges this problem and the need to increase the rate and the depth of renovations, setting the objective of at

least doubling the annual energy renovation rate by 2030 in view of reducing GHG emissions of buildings by at least 60%.

The European Alliance to Save Energy believes that the review of the Energy Performance of Buildings Directive (EPBD) is a unique opportunity to increase energy savings, optimise energy consumption and reduce GHG emissions, as well as to introduce resource efficiency and circularity principles in the buildings sector. In this respect, the ongoing revision of the EPBD is key to introduce new policy signals to stimulate a minimum of a 3% renovation rate per year combined with an average energy efficiency improvement of 75% across Europe. This will help the EU to reach its environmental goals while contributing to fast economic recovery, sustainable growth, local job creation and delivering of multiple benefits to citizens⁶.

Other measures designed for the decarbonisation of the building stock, such as carbon pricing, can be part of this effort, yet we believe they should not replace impactful regulatory measures such as the EPBD, which drives the energy savings necessary to meet climate neutrality. In our view, policies related to the building sector, including the EPBD, should be kept in the Effort Sharing Regulation (ESR) sectoral scope with increased ambition⁷.

1. [A Renovation Wave for Europe – Greening our buildings, creating jobs, improving lives](#), European Commission, 2020

2. [Comprehensive study of building energy renovation activities and the uptake of nearly zero-energy buildings in the EU](#), European Commission, 2020

3. On average, non-residential buildings are also 40% more energy intensive than residential buildings with a consumption of 280 kWh/m²

4. [A Renovation Wave for Europe – Greening our buildings, creating jobs, improving lives](#), European Commission, 2020

5. *Odyssey Mure EU*, 2017

6. [EU-wide Renovation Wave: Where Growth and Strategy and job creation meet climate goals and social inclusiveness](#), European Alliance to Save Energy, 2020

7. [Decarbonising the building and heating sectors: considerations on carbon pricing](#), European Alliance to Save Energy, 2020

Benefits of buildings renovations

The renovation of the EU building stock delivers a broad range of benefits. For example, raising the annual rate of renovation by 1.15%, or roughly doubling it, is calculated to deliver:

🏠 101 B EUR additional investment per annum in 2030⁸

🏠 568.000 net additional direct jobs in 2030⁹. According to the International Energy Agency and BPIE, investment in energy efficiency in buildings can create 12-18 jobs per million Euros of investment, more than in other areas of energy policy¹⁰

🏠 925.9 M EUR per year of monetised health benefits, in the form of lower mortality and health-care costs for the period from 2020-2030

🏠 The removal from energy poverty of between 5.17 million and 8.26 million households in 2030 (out of the current 23.3 million across the EU)¹¹ In addition, the reduction in energy demand and the reduced need for fossil fuel imports will enhance energy security as every additional percentage point in energy savings reduces gas imports by 2,6 percentage points¹².



To deliver these benefits, based on our work over the past years^{13,14}, we suggest a comprehensive revision of the EPBD along the following lines:

1. Acknowledge buildings as energy infrastructure and apply the Energy Efficiency First principle
2. Introduce Minimum Energy Performance Standards for all the existing building stock
3. Aim for energy efficient, flexible, and smart-ready buildings
4. Promote a neighbourhood approach to maximise energy efficiency
5. Update the Energy Performance Certificates, introduce digital Building Renovation Passports and explore the link with the Digital Building Logbook
6. Provide more and better technical assistance and build capacity to increase the demand of renovation projects
7. Ensure all new buildings are both highly efficient and fossil free from 2025 onwards

8. [Filling the policy gap](#): MEPS, RAP, 2020

9. Ibid

10. [Sustainable Recovery](#), International Energy Agency, 2020 and also [Building Renovation Wave](#), BPIE, 2020

11. [Filling the policy gap](#): MEPS, RAP, 2020

12. [Energy Efficiency and its contribution to energy security and the 2030 Framework for climate and energy policy](#), EU Commission, 2014

13. [EU wide Renovation Wave: where growth strategy and job creation meet climate goals and social inclusiveness](#), EU-ASE, 2020

14. [Recommendations for a neighbourhood approach to maximize energy efficiency in renovation and energy planification](#), EU-ASE, 2020

1. Acknowledge buildings as energy infrastructure and apply the Energy Efficiency First principle

In the buildings sector the application of the Energy Efficiency First (EE1) principle is *conditio sine qua non* for faster integration of renewables, resource and material efficiency as well as application of circularity principles¹⁵. Buildings are active participants in the energy system: being energy efficient, they can reduce energy demand but also manage, store, and generate energy. The EPBD must recognise that aggregated buildings are a crucial infrastructure for Europe and as such the EE1 principle needs to be systematically factored into all energy and investment decisions-making process related to them. The EPBD should be revised to promote policies and measures that - by leading to the reduction and optimisation of energy demand in buildings and energy efficient system integration - make the decarbonisation of the energy system economically feasible and socially acceptable.

¹⁵. For example, smart water management and integration of green infrastructures improve buildings' climate resilience and lead to energy savings and emission reductions while helping to save water, recreate the natural water cycle and increase urban biodiversity.



2. Introduce mandatory Minimum Energy Performance Standards for all the existing building stock

To drive faster progress and renovation at scale, the EPBD review should establish a long-term renovation pathway for the existing building stock. The introduction of mandatory Minimum Energy Performance Standards (MEPS) requires existing buildings to meet a minimum performance standard by a given date or at a chosen trigger point in the building lifecycle, such as sale or renovation. By setting a standard, or a trajectory to achieve the minimum goal in terms of energy consumption reduction, MEPS will drive the desired depth of renovation and can also boost the renovation rate by setting out which buildings must be improved by when. The EPBD should start by introducing long-term primary and final energy reduction milestones for the building sector to set-up a clear direction and to accelerate the renovation market in Europe.

MEPS could be introduced for the worst performing buildings first and differentiate between non-residential buildings and residential buildings in the private and public sectors. Their design

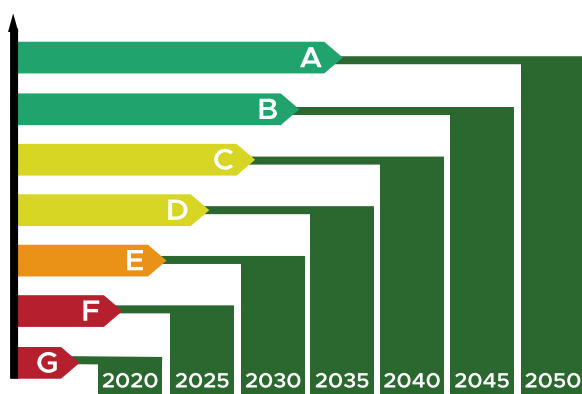


Illustration of an incrementally increasing MEPS by energy performance certificate class (RAP, Filling the policy map: MEPS, 2020)

should build upon the analysis of the Long Term Renovation Strategies (LTRS) to assess in which segments to deploy them first. Such standards could be phased-in proposing a trajectory for renovations, by starting with stricter requirements for specific types of buildings, e.g. either public, commercial or residential buildings, and extended progressively to other buildings over a period of time. They should be closely linked with enhanced Energy Performance Certificates (EPC) to define different classes of buildings upon performance. We believe that the public sector can have an exemplary role leading the Renovation Wave.

The public estate accounts for around 12% of all non-residential buildings in the EU.¹⁷ Reducing the energy demand of public buildings is an essential contribution to reach climate neutrality. Thus, public buildings should be fully decarbonised by 2040. Such minimum standards approach is not new in European buildings policy.

France, for instance, has introduced a ban on renting poor performing buildings from 2023, as well as an obligation to renovate the worst performing buildings by 2028. Concerning the non-residential buildings, the French tertiary decree could be used as an example¹⁶. The French law prescribed all tertiary buildings above 1000m² to reduce their final energy consumption by -40% by 2030, -50% by 2040, and -60% by 2050.

In the Netherlands, all office buildings will have to have an Energy Performance Certificate of at least Class C by 2023, increasing to Class A by 2030.

In Belgium, Flanders is also considering proposals for minimum energy performance levels for non-residential and residential rented buildings.

It is fundamental that a stable legal framework is established at EU level to guarantee a successful roll-out of MEPS. Presence of financial support schemes is equally important, especially to support the renovation of the residential segment.

As part of the EPBD revision, the Commission also considers introducing a 'deep renovation' standard, to enable anchoring significant private financing to transparent, measurable and genuinely "green" investments. The definition of such deep renovation standard should relate to energy savings also expressed in terms of GHG emissions related to the energy use, and cover broader impactful aspects on the renovation quality, such as health and environmental standards, climate resilience or accessibility. A deep renovation standard should not only support the deployment of more and better accessible financing schemes targeting compatibility with the long term climate goals, but should also help the entire value chain prepare for delivering deep and staged deep renovations at scale.

¹⁷ [Building 4 People: Building the business case for better office, school and hospital buildings in Europe](#), BPIE, 2018

3. Aim for energy efficient, flexible, and smart-ready buildings

Buildings are the nexus between energy supply and demand and strengthening buildings smart-readiness and digitalisation is a necessary step. The EPBD must be revised to ensure that a highly efficient EU building stock fully integrates demand flexibility and energy storage. In this respect, digitalisation is a driver for energy efficiency and energy system integration, as most energy efficient technologies are digital. Thanks to high level of efficiency and digitalisation, new and renovated buildings, with lower energy demand, grid balancing functions and storage capacity¹⁷, provide a unique opportunity to catalyse the integration of renewables, transition to a decentralised energy system and avoid system overload which turns to be key to ensure grid stability and support the deployment of charging points for electric mobility¹⁸.

To assist the digitalisation of the building stock, the EPBD should:

- 🏠 Strengthen the implementation requirements related to smart technologies in the current EPBD, e.g. introduce Smart Readiness Indicator (SRI) as mandatory requirement for all new non-residential buildings while supporting the development of links between SRI and other schemes (EPC, building renovation passports, building logbooks, etc)
- 🏠 Reform of the energy performance certificate to complement the calculated performance with a data-model approach in reference points about their level of performance
- 🏠 Gradually incorporate a data-model approach within the SRI
- 🏠 Identify other digital tools providing value-added in term of circularity/efficiency and flexibility
- 🏠 Promote increased data availability and transparency of products and system performance

🏠 Launch up-skilling programmes to develop skills necessary to realise digital transformation while ensuring that those programmes foster the integration of all technologies (passive, active and digital)

🏠 Leverage Artificial Intelligence (AI) in buildings and data analytics as a key enabler to monitor, manage and automatically adjust energy consumption

🏠 Mandate the roll-out of digital design and operating tools (Building Information Modelling (BIM) in construction work (and renovation work when applicable)

🏠 Provide guidelines for regulatory sandboxes at the national level



17. In addition to batteries, a growing body of evidence shows the role that can be played by buildings' thermal storage capacity (buildings as batteries). [Highly insulated buildings as a crucial element for smart city, grid balancing and energy storage for renewables](#), end-use Efficiency Research Group, Politecnico di Milano (eERG), 2020
 18. [Energy Efficiency and Electric Vehicles: How Buildings Can Pave the Way for the Global EV Revolution](#), Rocky Mountain Institute, 2018

4. Promote a neighbourhood approach to maximise energy efficiency

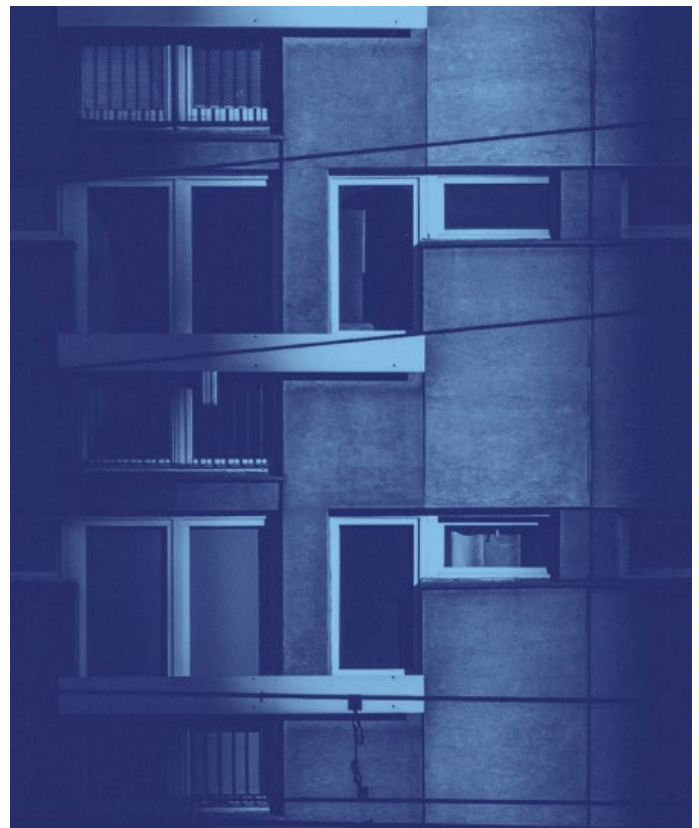
Given the multiple benefits of a neighbourhood approach for building renovation and energy planning, the revised EPBD should integrate this approach. A proper design of building energy renovation projects at the level of a neighbourhood delivers numerous benefits¹⁹, and should:

- 🏠 Realise economies of scale and utilise new financing and business models allowed by the possibility to bundle otherwise fragmented renovation projects
- 🏠 Match the reduced energy needs of the buildings, following the implementation of energy efficiency measures, with residual future supply needs (reduced peak power demand and grid size) from renewable sources. This will help to ensure the most cost-efficient balance between investing in energy efficiency in buildings and decarbonisation of supply
- 🏠 Achieve synergies among infrastructures, fuel sources, and different parts of energy systems enabling the sector integration that can only happen at the level of territory, including use of energy which would be otherwise wasted (i.e., waste heat from nearby industrial facilities, data centres and urban infrastructures delivered through highly efficient district heating networks)
- 🏠 Strengthen and consolidate of local communities, via the realisation of wider and socially inclusive urban regeneration programmes

Deploying an integrated neighbourhood approach will help accelerate deep and staged deep renovation thanks to the possibility to apply similar combinations of measures to buildings of the same

type/age²⁰. All the potential energy efficiency measures (both on the supply and demand side) should be systematically assessed before devoting any public and private investment in residual energy generation capacities.

Besides, we recommend that to strengthen the coherence between the EPBD and the Energy Efficiency Directive (EED), a link should be made between Long Renovation Strategies (article 2a of EPBD) and the assessment for efficient heating and cooling (article 14 of EED) to make sure that planning for renovation and heating and cooling supply happens at the same time and at the right level of neighbourhoods.



19. [Recommendations for a neighbourhood approach to maximize energy efficiency in renovation and energy planification](#), EU-ASE, 2020
20. Ibid

5. Update the Energy Performance Certificates, introduce digital Building Renovation Passports and explore the link with the Digital Building Logbook

All Member States have introduced Energy Performance Certificates (EPCs). The implementation of national Energy Performance Certificate regimes led to a diverse set of instruments, varying in terms of scope and available information, resulting in some cases in limited reliability, compliance, market penetration and acceptance at countries level. Now, the information included in the EPCs are not adequately tailored to the needs of the owner and do not provide the guidance and support required throughout their energy renovation journey. One of the biggest barrier to renovation is the lack of information for building owners on how to properly plan, finance and implement renovations. Moreover, smart data usage, energy flexibility and the impact of energy management systems are not covered in the current EPC regimes.

The current EPC system needs to undergo a harmonization process, starting by introducing a common template to address the current barriers linked with national EPCs. Additionally, EPCs should evolve into a tool (Building Renovation Passport) which will help to design building specific renovation roadmaps towards the decarbonization of the EU building stock, providing a “health check” on the building, including tailored advice to owners and investors on how to improve it. EPC must take into account a wider range of parameters to estimate the actual energy performance of a building, in particular management, control and monitoring mechanisms. France for instance has already introduced a ban on rent increase in the case of poorly performing buildings, starting in 2021 based on revised Energy Performance Standards with a mandatory display in primary energy, complemented by the display of the GHG emissions of the buildings.

The review of the EPC needs to reflect digital progress by allowing innovative measuring technologies based on real performance. In this context, as announced in the Renovation Wave strategy it is crucial that the European Commission establishes a trusted scheme for certifying energy efficiency meters in buildings that can measure actual energy performance improvements.

As such, the EPC reform should aim to harmonise key indicators across Europe, in particular, the indication of the building performance in primary and final energy/GHG emissions reductions so to enable a better engagement by end-users. The Commission should also foresee the introduction of digital Building Renovation Passports (BRP)²¹, which would integrate into the Digital Building Logbook gathering all relevant technical and legal information (i.e., valuable and essential data that property owners will need to plan and execute staged deep renovations over the lifetime of a building, even if ownership and tenancy change). Such digital building logbook would also provide an appropriate level of access to key data to various stakeholders involved in the construction value chain.

21. Another frequently used term is “Digital Building Logbook”; see [Definition of the Digital Building Logbook](#); European Commission, 2020

6. Provide more and better technical assistance and build capacity to increase the demand of renovation projects

Technical Assistance (TA) is essential to remove the hurdles for local authorities, SMEs, and corporate investments to implement energy efficiency projects and renovate the building stock. The revised EPBD should include provisions that require specific allocations for TA and capacity building across renovation funds and programmes (European and national). We believe that 10% of renovation funds' allocations should be spent on TA including support for public authorities to map their buildings stock and prepare their long-term renovation strategies, develop and aggregate renovation proposals. In this respect, the revision of the EPBD should foresee the set up of an expert group, involving various European Commission services (ENER, REGIO, REFORM, CLIMA, RESEARCH and others) and the European Investment Bank, to increase and improve TA and capacity building. After all, more and better TA and capacity building is one of the most important enabling tools for meeting the Green Deal and green recovery objectives. Public financial incentives are an important leverage to stimulate deeper renovations. The intensity of funding should depend on the depth of renovations based on the EPC class achieved. But as deep and staged deep renovations provide the biggest energy savings and GHG reductions, delivering most of health benefits and comfort for citizens, we believe public financial schemes should prioritise these types of renovations. In addition, all public funding scheme for building renovation should be conditioned to a mandatory sharing of measured building performance data for a minimum of 5 years after the start of the renovation.

7. Ensure all new buildings are both highly efficient and fossil free from 2025 onwards

The framework for evaluating the energy performance of buildings must be adapted in order to achieve higher ambition in line with 2030 and 2050 targets. Newly constructed buildings need to reach the best energy performance levels; this will enable to reach full renewable supply and the phasing-out of fossil fuels from new buildings. More efforts are needed to align the NZEB levels with the EC recommendations of 2016. The definition of NZEB in the EPBD Article 2 must be adapted to ensure that new buildings are highly efficient and decarbonised. It should introduce a common EU methodology going beyond cost-optimality for calculating the required performance of NZEBs.

In addition, the current numeric thresholds of NZEB should be modernised and harmonised, taking into account the different EU climate zones. These thresholds should take into account both primary and final energy consumption. The residual energy needs would have to be covered by renewable energies from onsite or nearby sources. Article 9 on Nearly Zero Energy Buildings must be amended accordingly. Countries such as the Netherlands, France, Flanders (Belgium), Denmark and the UK have already adopted such provisions.

Looking only at the operational emissions is insufficient to trigger the full decarbonisation of the building stock. The EPBD should promote reporting on operational and on whole life carbon (embodied carbon) emissions for new buildings and major renovations, for example with public and large constructions. This measure would greatly contribute to the 2050 Whole Life Cycle Performance Roadmap due in 2023 and gather data for future work on benchmarking and thresholds. Reporting should be based on EU common methodologies and standards (i.e. Level(s) initiative). Carbon metrics are a necessary tool to help in the decarbonisation process, as long as they complement energy metrics, which are at the heart of the EPBD and remain the main tool to improve the energy performance of buildings.

Finally, we support the introduction of a definition for Zero Emission Buildings. Based on the Energy Efficiency First principle, these buildings should achieve ultra-efficient levels of energy performance. Their nearly zero energy needs should be supplied with 100% renewables and they should take into account whole life carbon emission reductions to foster material efficiency as well as the application of circularity principles.

The European Alliance to Save Energy (EU-ASE) aims to advance the energy efficiency agenda in Europe. The Alliance allows world's leading multinational companies to join environmental campaigners and a cross-party group of Members of the European Parliament.

EU-ASE business members have operations across the 27 Member States of the European Union, employ over 340.000 people in Europe and have an aggregated annual turnover of €115 billion.

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