



Energy Performance of Buildings Directive 2010/31/EU: Fit for 55 revision

Implementation
in action

IN-DEPTH ANALYSIS

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This paper has been produced by the European Parliamentary Research Service (EPRS) to assist the ITRE committee in its work on the implementation report on the Energy Performance of Buildings Directive (EPBD) as part of the Fit for 55 package. It aims to provide a succinct overview of publicly available material on the implementation, application and effectiveness to date of the EPBD, drawing on input from EU institutions and bodies and of non-EU organisations. It takes a thematic approach, placing special focus on Member States' long-term renovation strategies.

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Executive summary

The Energy Performance of Buildings Directive 2010/31/EU (EPBD) is the main EU-level legal instrument for decarbonising the Member States' building stock. Since its adoption, the EPBD has been closely connected with the EU climate targets and has been aligned to reflect their progressive evolution. Its central role in reaching climate targets is explained by the fact that buildings are responsible for approximately 40 % of the EU's energy consumption and 36 % of its CO₂ emissions. In this context, the core aim of the directive – to systematically enhance the energy performance of buildings and to increase the level and depth of renovations – has remained unchanged since its introduction.

This publication takes a look at the transposition and implementation of the EPBD, drawing on publicly available sources. It is too early to make an ex-post evaluation of the EPBD revision introduced in 2018, since its transposition ended only about a year ago, in March 2020. Nevertheless, it is possible to elaborate on the successes and challenges that have surfaced since the EPBD was originally adopted in 2010.

The 2010 EPBD was a recast of the 2002/91/EC directive, underpinned by the action plan for energy and climate framework for 2020. Later, a targeted revision of the EPBD was launched as part of the clean energy for all Europeans package and adopted in 2018. The upcoming second revision is envisaged in the second part of the fit for 55 package, due at the end of 2021, in order to align the directive with the latest EU climate targets and to deliver the Renovation Wave action plan.

Over time, the European Parliament has consistently advocated an ambitious and binding EU climate commitment. This approach is more ambitious, though consistent with that taken by the European Council. Regarding the legislative procedure, some differences between the co-legislators' approaches were highlighted in the recast and revision procedures of the EPBD, where the Council of the EU strongly underlined the importance of national leeway.

The successes and failures of the EPBD have been determined by its ability to make a lasting change on the ground, which is strongly related to the effectiveness of transposition and implementation measures. The ex-post analysis of the EPBD found that by and large it has fulfilled both its general and specific goals. However, reports and studies reveal that there is a significant unexploited energy-efficiency potential in buildings renovation. This is notably due to sub-optimal transposition, lack of adequate funding and other barriers. That said, the EPBD has been characterised by gradual improvement, including timely expansions of its scope, combined with increased clarity, support for implementation and growing internal and external coherence. At present, the Renovation Wave action plan is introducing a holistic approach to boost renovation and to mobilise stakeholders on all levels in order to double the rate and increase the depth of buildings refurbishment.

The last of the five chapters of this publication provides a deep dive into national long-term renovation strategies (LTRSs) and funding of renovation, both of which are key for translating the EPBD into action. Long-term renovation strategies include a commitment to decarbonisation of the national building stock accompanied by planned measures and milestones. Progress made over the years has underlined the importance of national renovation strategies, which, though adopted at a slow pace, now play a central role in the building sector and lie at the core of post-pandemic recovery.

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1. Context and scope of the Energy Performance of Buildings Directive

The Energy Performance of Buildings Directive (EPBD) plays a central role in increasing energy efficiency and thus contributes to the reduction of greenhouse gas emissions and the incorporation of renewable energy sources into the policy area it covers. The EPBD sets minimum requirements for the energy performance of buildings in the EU countries, introduces a common framework for calculating buildings' energy performance, and seeks to raise the level of energy efficiency while taking into account varying climatic and local conditions.¹

The EPBD is a centrepiece of the EU legislative framework related to climate and energy, which is accompanied by more technical delegated and implementing acts. The Commission has also mandated standards and set up several platforms to facilitate the transposition and implementation of measures on the energy performance of buildings.

1.1. Adoption and legal framework

Energy performance of buildings is a shared competence between the EU and the Member States under the energy policy. It is rooted in Article 194(2) of the Treaty on the Functioning of the European Union, which provides the legal basis for EU policy focused on promoting energy efficiency and energy savings. The EU has a mandate to take action related to the establishment and functioning of the internal market and to the need to preserve and improve the environment.²

The **ordinary legislative procedure**³ applies in this area. The Parliament and the Council decided as co-legislators on the recast of the EPBD 2010/31/EU, in two readings which took 18 months from the Commission's proposal to its adoption. The revision of the EPBD 2018/844/EU was accomplished in 19 months and took one reading.⁴

Both legislative procedures included thorough discussions between the Parliament and the Council in terms of balancing mandatory common targets and needs for national flexibility. Generally speaking, differences between the co-legislators were the same on both occasions: the Parliament advocated a stronger stance regarding climate targets while the Council wanted to secure national leeway. For example, the Council objected to binding renovation targets and argued for indicative milestones instead of binding ones.

The EPBD triggered some **reactions from national parliaments** linked to their right to exercise scrutiny based on the principles of subsidiarity and proportionality.⁵ The Dutch House of Representatives and the German Bundesrat raised concerns regarding the Commission's proposal to recast the EPBD in 2010. The Dutch House of Representatives was critical about the EU's mandate in the area of housing, arguing that housing was not a cross-border phenomenon, and challenged the detailed provisions of the proposed directive for their lack of proportionality. In addition to the Netherlands and Germany, Lithuania raised concerns and had an information exchange with the

¹ Article 1 of the Energy Performance of Buildings Directive.

² Article 194(2), Title XXI: Energy, TFEU.

³ Article 294 TFEU.

⁴ Procedures 2008/0223/COD and 2016/0381/COD.

⁵ Article 12 TEU, Protocol 1 and 2 to the Treaties on the Application of the Principles of Subsidiarity and Proportionality

Commission.⁶ Similar concerns on subsidiarity and proportionality surfaced again in the context of the revision of the EPBD in 2018.⁷ The Netherlands issued a reasoned opinion questioning the shared competence between the Member States and the Union in the field of CO₂ reduction, using the measures on electro-mobility parking spaces as an example of rigid EU-level actions. In addition, six chambers (the Austrian Federal Council, the Czech Senate, the French National Assembly, the Italian Senate and Chamber of Deputies, and the Portuguese Assembly) launched political dialogue with the Commission.

The EPBD sets a minimum level of harmonisation, leaving room for the Member States to adjust implementation according to their national and local conditions. The Member States have to reach at least the level defined in the act when transposing it into their national legislation, but may exceed its terms.

The **EU framework on energy and climate** is a network of interrelated legislative and non-legislative initiatives. Visions and strategies are put in practice by action plans and legislative proposals as well as other EU-level actions, such as guidance, technical assistance and projects with stakeholders.

The EU, delivering on its commitment to the UNFCCC, has placed the Paris Climate Agreement at the heart of its climate and energy endeavours. The forthcoming revision of the EPBD is underpinned by the vision presented in the European Green Deal, which has been translated into a concrete Renovation Wave action plan.⁸ Moreover, the newly adopted European Climate Law sets a legally binding target of net-zero greenhouse gas emissions by 2050 and an interim target of -55 % net emissions of greenhouse gases by 2030.

Previously, it was the adoption of the EU climate and energy package for 2020,⁹ aimed at reducing GHG emissions by 20 % compared to 1990 levels by 2020, that triggered the recast of the Energy Performance of Buildings Directive. Similarly, the EU Climate and energy framework 2030, combined with the strategic long-term vision entitled Clean Planet for All, and the clean energy for all Europeans package, raised the level of climate ambitions by setting the goal of achieving a reduction of GHG emissions by 40 % by 2030 and by scheduling a revision of the EPBD.¹⁰

As regards the legislative framework, the EPBD is closely connected to and complements the Energy Efficiency Directive (EED), which sets requirements related to the energy performance of buildings. Article 7 of the EED requires the achievement of a cumulative energy savings target by 2030; this requirement drives to a large extent the policy measures in the building sector. Article 3 of the EED introduces a common energy efficiency target. Article 5 of the EED defines the exemplary role of public bodies' buildings, including measures regarding a 3 % renovation rate. Provisions on public procurement are set in Article 6 of the EED.

The energy performance of buildings depends not only on energy savings but also on energy sources. In this regard, the EPBD is linked to the Renewable Energy Directive (RED) and the

⁶ Iplex database, Dossier COD/2008/0223, <https://secure.ipex.eu/IPEXL-WEB/document/COM-2008-0780>.

⁷ Iplex database, Dossier COD/2016/0381, <https://secure.ipex.eu/IPEXL-WEB/document/COM-2016-765>.

⁸ Green Deal COM(2019)640 and Renovation Wave COM(2020)662.

⁹ Climate and energy package, https://ec.europa.eu/clima/policies/strategies/2020_en.

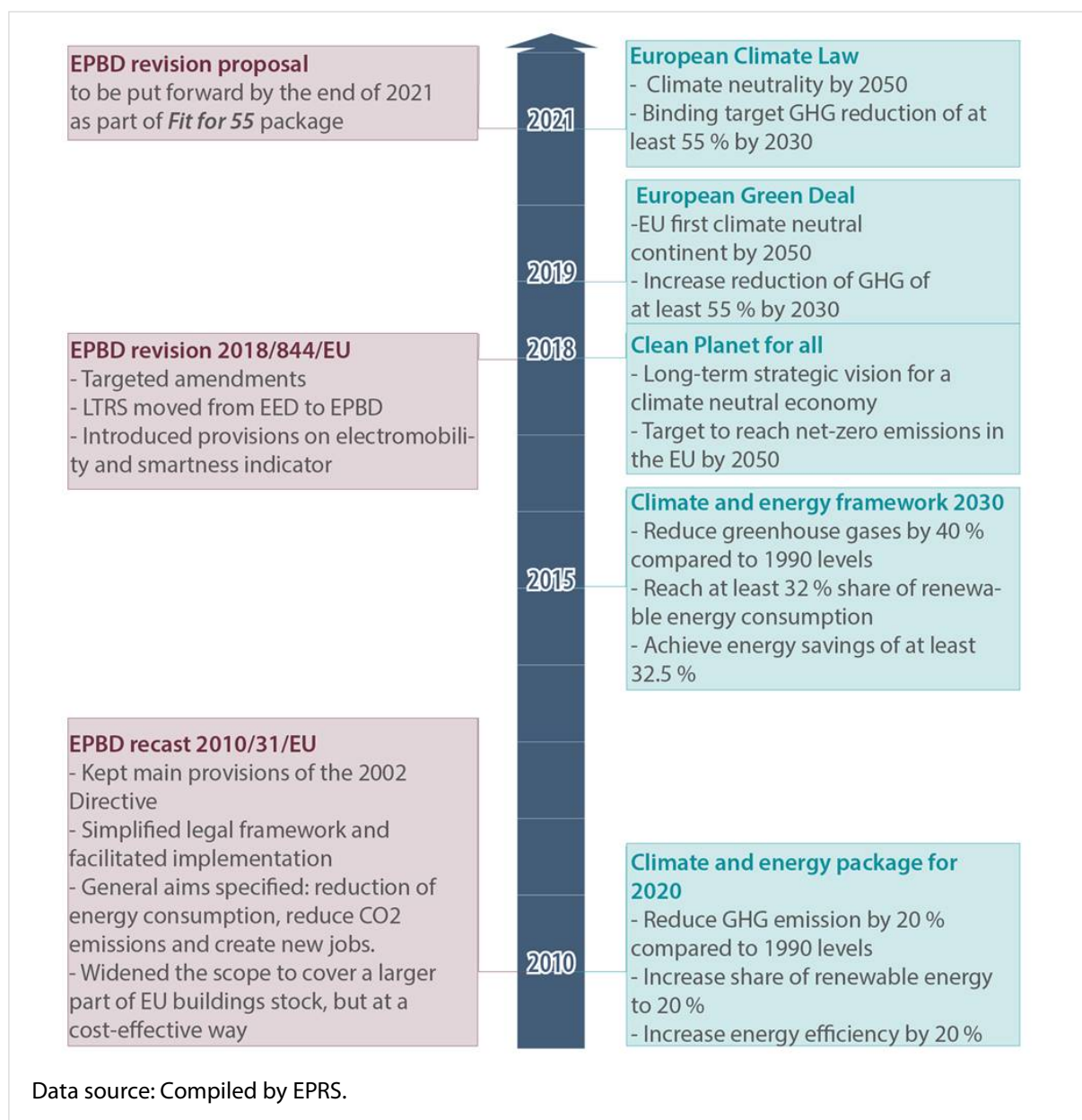
¹⁰ Climate and energy framework 2030, https://ec.europa.eu/clima/policies/strategies/2030_en#tab-0-1, Clean Planet for All and Clean Energy for all Europeans COM(2018)773.

Alternative Fuels Infrastructure Directive (AFID).¹¹ The fit for 55 package covers these directives as part of a larger revision of the EU climate and energy framework. The first part of the fit for 55 package was adopted in July 2021. It envisages, inter alia, a revision of the EED, the RED, the AFID, and the Energy Taxation Directive. The second part of the fit for 55 package envisages the revision of the EPBD together with the revision of the third energy package for gas.

The energy performance of buildings is also related to other legislation such as the directives on energy taxation, eco-design and eco-labelling. Furthermore, the EPBD has synergies with numerous Green Deal initiatives, notably the circular economy action plan, the industrial strategy for Europe, the EU strategy on energy system integration, the smart and sustainable mobility strategy and the EU strategy for adaptation to climate change.

¹¹ Energy Efficiency Directive 2018/2002/EU, Renewable Energy Directive 2018/2001/EU, Alternative Fuels Directive 2014/94/EU.

Figure 1 – Alignment of the EPBD with EU climate and energy targets



1.2. An overview of the content and different phases of the EPBD

The general **objectives of the EPBD** are to reduce the EU's final energy consumption and reduce CO₂ emissions as well as contribute to the creation of jobs. Article 1 of the directive defines its specific objective as one involving the improvement of the energy performance of buildings while taking into account various climatic and local conditions.

To this end, the EPBD lays down requirements as regards:

- a common general framework for a methodology for calculating the integrated energy performance of buildings and building units;
- the application of minimum requirements to the energy performance of new buildings and new buildings units;

- the application of minimum requirements to the energy performance of:
 - existing buildings, building units or elements subject to major renovation;
 - buildings elements that form part of the building envelope and that have a significant impact on the energy performance of the building envelope when they are retrofitted or replaced; and
 - technical building systems whenever installed, replaced or upgraded;
- national plans for increasing the number of nearly zero-energy buildings;
- energy performance certification of buildings and building units;
- regular inspection of heating and air-conditioning systems in buildings; and
- independent control systems for energy performance certificates and inspection reports.¹²

A directive on the energy performance of buildings was first introduced in 2002 and then recast in 2010 (the current EPBD). The recast kept the main provision of the first directive with an intention to simplify the EU-level legal framework and to facilitate its transposition and implementation.

The scope of the **recast EPBD** was enlarged to cover a larger part of the EU building stock. The recast directive also aimed to ensure that the policy instruments used do incentivise energy savings, but at a low additional cost. To this end it established a calculation method for cost-effective energy performance requirements for buildings. The core elements included the introduction of nearly zero-energy buildings, measures to stimulate renovation through appropriate financing and rules on penalties. Moreover, new provisions on independent control systems and reporting on heating and cooling inspections were set, while existing measures on inspections of heating and cooling, energy performance certificates and high-efficiency alternative systems were strengthened. The principle that the public sector should set a good example as regards the energy efficiency of buildings has been key throughout the existence of the EPBD, and has been backed by Article 5 of the EED.¹³

The **revision of the EPBD** in 2018 introduced some new articles but mainly focussed on streamlining a limited amount of provisions. The incorporation of national long-term renovation strategies (previously contained in the EED) into the EPBD was a major development that offered a possibility to enlarge their scope and increase their requirements. The revision expanded the inspection regime of heating and air-conditioning systems, while also encouraging the use of information and communication technology and smart automation and control technologies in buildings. Moreover, it supported the rollout of an infrastructure for recharging electric vehicles in buildings' car parks and introduced a 'smart readiness indicator' as well as an optional common EU scheme to rate buildings' capacity to adapt to the needs of their occupants, optimise their operation and interact with the grid.¹⁴

The Member States' **long-term renovation strategies** explain how they will support the transformation of their residential and non-residential building stock, both public and private, into a highly energy-efficient and decarbonised one by the middle of this century. In addition, they aim to facilitate the cost-effective transformation of existing buildings into nearly zero-energy ones.

¹² Article 1 of the EPBD.

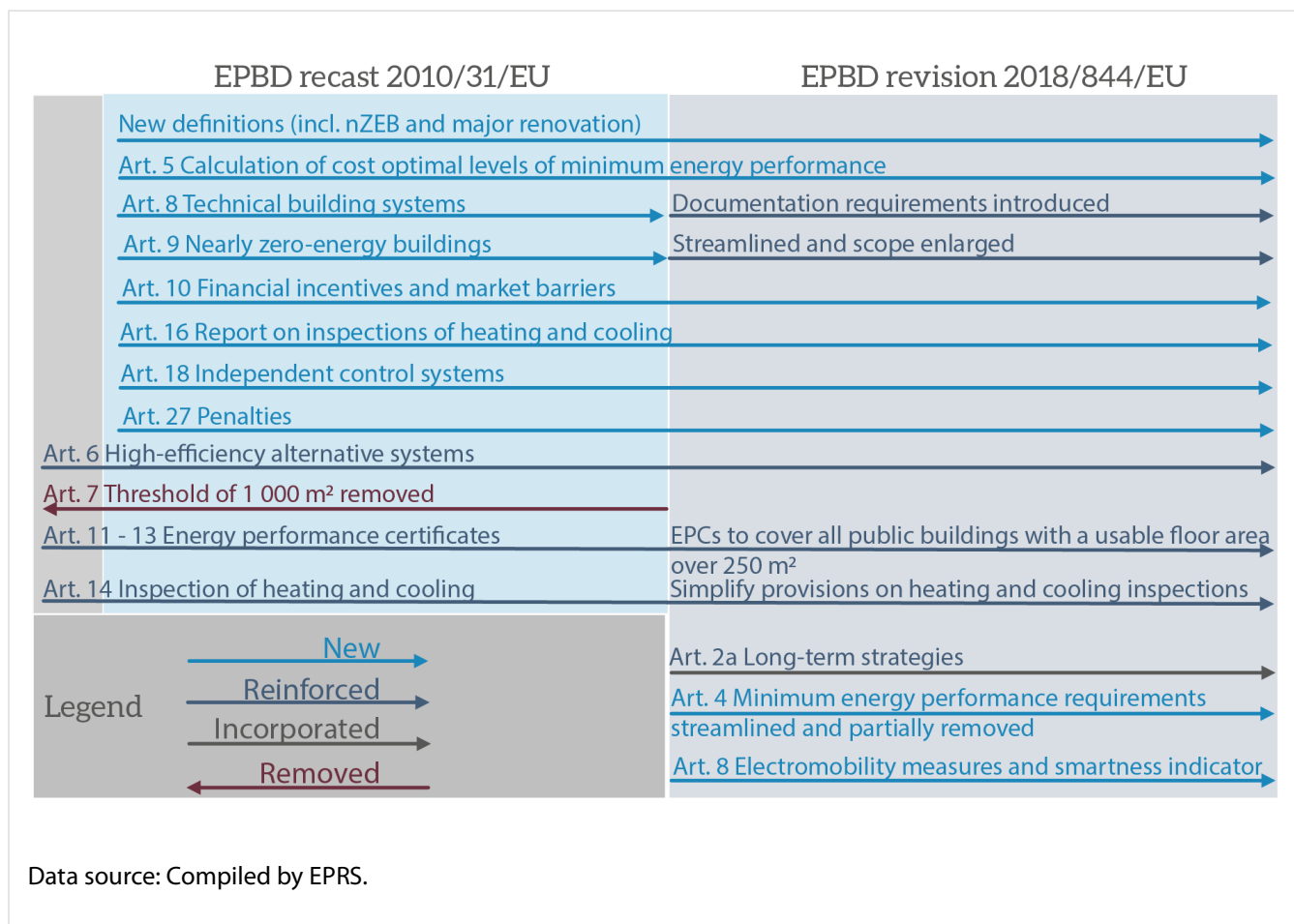
¹³ Economidou M., Todeschi V., Bertoldi P., D'Agostino D., Zangheri P. and Castellazzi, L., Review of 50 years of EU Energy Efficiency Policies for Buildings, ENERGY AND BUILDINGS, ISSN 0378-7788, 225, 2020, p. 110322, JRC120887.

¹⁴ Wilson Alex Benjamin, Improving energy performance of buildings, Briefing, EU Legislation in Progress, EPRS, European Parliament, 2021.

Furthermore, these strategies provide a roadmap with measures and measurable progress indicators with indicative milestones for 2030, 2040 and 2050. In addition, they specify what contributions need to be made towards achieving the EU energy efficiency targets in accordance with the EED provisions (for further details on this subject, see Section 5 below).

An ex-post evaluation of the EPBD is scheduled to take place by 2026 at the latest, according to Article 19 of the EPBD. This should contribute to drawing lessons from the experience gained and assessing the progress made in applying the EPBD. This cycle is accelerated significantly by the introduction of a revision in 2021 as part of the second part of the fit for 55 package.

Figure 2 – Evolution of the main articles of the EPBD 2010/31/EU



1.3. Transposition and implementation

The 2010 EPBD, including the amendments made to it in 2018, shares a considerable number of common features with the first Directive on Energy Efficiency of Buildings, cast in 2002. It basically retains the same objectives and has been to a large extent incorporated into the Member States' national measures through the same legislative acts. The transposition time of the 2010 EPBD ended on 9 July 2012. Its incorporation into the Member States' national legislations has been duly analysed by the Commission. The transposition time for the amending Directive (EU) 2018/844 ended on 10 March 2020. The results have not been fully analysed; by June 2021, two Member States still had to report their transposition measures.

All Member States have reported **national transposition measures** related to the 2010 EPBD. The Commission has brought action before the European Court of Justice against four Member States on the grounds of their failure to fulfil certain obligations under the EPBD. Three of those cases have been removed from the register¹⁵ and the case of one Member State has received a ruling by the court.¹⁶ Regarding the transposition of the 2002 directive, the Commission filed two cases in relation to Member States' failure to fulfil their obligations.¹⁷

1.4. Delegated and implementing acts

In order to support the modernisation of buildings through digitalisation and adoption of smart building technologies, the Commission has issued a **delegated regulation** on the methodology for an optional common Union scheme for rating the smart readiness of buildings; it has also issued an **implementing regulation** clarifying the technical details of this methodology.¹⁸ Both acts became applicable on 10 January 2021. A Smart Readiness Indicator (SRI) was introduced in the 2018 revision of the EPBD bringing in an optional common scheme rating the buildings' (or building units') capability to adapt to advanced technologies, to optimise their performance and their flexibility in terms of energy solutions/interaction with the grid.

The Commission has adopted a **delegated regulation**¹⁹ on the methodology of defining cost-optimal levels of minimum energy performance requirements for buildings and building elements according to Article 5(2) and Annex III to the EPBD. This delegated act establishes a comparative methodology framework that differentiates between new and existing buildings as well as different categories of buildings and takes into account specificities such as climate conditions. Every five years, starting from 2012, the Member States have been submitting to the Commission reports on their assumptions and calculation results. Based on these reports, the Commission publishes analyses on the Member States' progress in attaining cost-optimal levels of minimum energy-performance requirements. The delegated regulation is accompanied by Commission non-binding guidelines aimed at facilitating the application of the methodology and assisting EU countries in taking the necessary steps.²⁰

¹⁵ C-305/19 *Commission v. Czech Republic*, C-329/14 *Commission v. Finland*, C-302/14 *Commission v. Belgium*.

¹⁶ C-160/16 *Commission v. Greece*.

¹⁷ C-345/12 *Commission v. Italy* and C-67/12 *Commission v. Spain*.

¹⁸ Commission Delegated Regulation (EU) 2020/2155 of 14 October 2020 supplementing Directive (EU) 2010/31/EU of the European Parliament and of the Council by establishing an optional common European Union scheme for rating the smart readiness of buildings (OJ L 431, 21.12.2020, pp. 9-24) and Commission Implementing Regulation (EU) 2020/2156 of 14 October 2020 detailing the technical modalities for the effective implementation of an optional common Union scheme for rating the smart readiness of buildings (OJ L 431, 21.12.2020, pp. 25-29).

¹⁹ Commission Delegated Regulation (EU) No 244/2012 of 16 January 2012 supplementing Directive 2010/31/EU of the European Parliament and of the Council on the energy performance of buildings by establishing a comparative methodology framework for calculating cost-optimal levels of minimum energy performance requirements for buildings and building elements (OJ L 81 of 21.3.2012, pp. 18-36).

²⁰ Guidelines accompanying Commission Delegated Regulation (EU) No 244/2012 of 16 January 2012 supplementing Directive 2010/31/EU of the European Parliament and of the Council on the energy performance of buildings by establishing a comparative methodology framework for calculating cost-optimal levels of minimum energy performance requirements for buildings and building elements (2012/C 115/01).

1.5. European Commission recommendations

In 2016, the Commission published **a recommendation**²¹ on guidelines for the promotion of nearly zero-energy buildings (NZEB) in order to promote best practices and to ensure that, by the end of 2020, all new buildings would be nearly zero-energy. The EPBD requires the Member States to draw up national plans for achieving the NZEB target it sets. The Commission monitors progress by publishing studies and reports on Member States' activities and on the uptake of nearly zero-energy performance buildings.

On the Member States' request, the Commission has published **two recommendations** to clarify and support the implementation of the revised EPBD. The first explains the content of the long-term renovation plans, including financial measures, in detail (Article 2a) and includes a framework for the calculation of the energy performance of buildings (Articles 2a, 10 and 20).²² The second, offering recommendations on building modernisation, addresses building automation and control, e-mobility and inspections (Articles 2, 8, 14, 15 and Annex 1).²³

The recommendations explain the content and technical details of the directive with the aim of ensuring a uniform understanding across the Member States as regards the preparation of transposition and implementation measures. They do not affect or alter the legal effects of the EPBD, nor the binding interpretations and case law of the European Court of Justice.

1.6. Standards

In order to support the implementation of the EPBD, in 2010²⁴ the Commission gave a mandate to the European Committee for Standardisation (CEN) to develop standards on how the energy performance of buildings should be calculated. Standardisation work started back in 2002, when the first version of the EPBD was launched. Later, it evolved into a collaborative effort going beyond Europe and covering both ISO-EPB and CEN-EPBD work with the aim of creating a harmonised way of tracking buildings' energy performance.²⁵ In 2017, **a set of standards** was published, accompanied by technical reports.²⁶

These standards are non-binding. Member States are free to adapt their local or regional calculation methods to local and climate conditions. However, there is a high de facto mandatory element, since Member States are to describe their national calculation methodology in line with the standards.²⁷

²¹ Commission Recommendation (EU) 2016/1318 of 29 July 2016 on guidelines for the promotion of nearly zero-energy buildings and best practices to ensure that, by 2020, all new buildings are nearly zero-energy buildings, OJ L 208, 2.8.2016, pp. 46-57.

²² Commission Recommendation (EU) 2019/786 of 8 May 2019 on building renovation, OJ L 127, 16.5.2019, p. 34.

²³ Commission Recommendation (EU) 2019/1019 of 7 June 2019 on building modernisation, OJ L 165, 21.6.2019, p. 70.

²⁴ M/480EN, 14 December 2010.

²⁵ <https://epb.center/epb-standards/energy-performance-buildings-directive-epbd/>

²⁶ M. Economidou, V. Todeschi, P. Bertoldi, D. D'Agostino, P. Zangheri and L. Castellazzi, Review of 50 years of EU Energy Efficiency Policies for Buildings, ENERGY AND BUILDINGS, ISSN 0378-7788, 225, 2020.

²⁷ Annex 1, Recommendation (EU) 2019/786.

1.7. A sample of platforms and portals

The Commission participates in several platforms and portals guiding the implementation as regards buildings' energy performance. Below is a sample of these initiatives, aimed at benchmarking actions and helping Member States and other stakeholders share best practices with each other.

Concerted Action EPBD (CA) is a joint initiative between the Commission and the EU countries.²⁸ It focuses on the energy performance of buildings, providing a platform for information-sharing on national adoption and implementation of the EPBD. The CA brings together representatives from the Member States and Norway, these being officials from those ministries and their affiliates that are in charge of the administrative and regulatory framework on the energy performance of buildings.

The European Commission EU Building Stock Observatory (BSO),²⁹ established following the drafting of the clean energy for all Europeans package, collects and provides data on the building stock and the energy performance of buildings in EU countries. It aims to offer a transparent access to a set of indicators through reliable, consistent and comparable data covering each EU country and the EU as a whole. The BSO has managed to gather the relevant data on the EU's building stock and its energy performance and has become a trustworthy information repository. The Commission is discussing with the Member States, stakeholders, market-players and data providers whether it would be possible to use the BSO as a central depository.³⁰

2. Revision of the EPBD as part of the fit for 55 package

Throughout the years, the EPBD has been recast and reviewed in order to further reap the existing energy efficiency potential in the building sector. The vision of a just transition towards a climate-neutral continent, followed by a renovation action plan, needs to be completed by imposing specific measures. The fit for 55 package addresses this need by updating the EU climate and energy legal framework in two parts, both covering the key EU instruments for cost-effective greenhouse gas reduction. The first part, presented in July 2021, included inter alia the EU ETS, the Effort Sharing Regulation and the LULUCF. The revision of the EPBD is included in the second part, which is to be published by the end of 2021.

On 14 July 2021, the Commission put forward a comprehensive and interconnected set of proposals for reducing net greenhouse gas emissions by at least 55 % by 2030, compared to 1990 levels.³¹ In this **first part of the fit for 55 package** the Commission undertook several important initiatives related to the revision of the EPBD later in the second part of the fit for 55 package, as listed below.

- The proposal to recast the Energy Efficiency Directive made the target on overall energy efficiency improvement legally binding, guiding the national contributions defined by the Member States. The proposal steps up the current objective of a 32.5 % increase in energy efficiency by 2030 to 36-37 % savings on final and 39-40 % on primary energy.

²⁸ <https://epbd-ca.eu/>

²⁹ https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/eu-bso_en

³⁰ Inception Impact Assessment, Ref. Ares (2021)1397833 - 22/02/2021.

³¹ European Green Deal: Commission proposes transformation of EU economy and society to meet climate ambitions, [European Commission Press Release 14/07/2021](#).

Compared to the current level of efforts (under the 2020 reference scenario), the EU will have to further increase its energy efficiency ambition by 9 % by 2030. The proposal also broadens the scope of renovation obligation of public bodies.

- The 'energy efficiency first' principle is proposed to be incorporated into the amended Renewable Energy Directive. Furthermore, the Commission proposes an increase of ambition from 32 % to 40 % of energy from clean sources with a special target of 49 % of renewable energy used in buildings by 2030, plus an increase of renewables in heating and cooling by 1.1 % each year.
- A new separate emission trading system for road transport and buildings sector was introduced as part of the ETS revision.
- A new Social Climate Fund will help the most vulnerable in the transition.
- The proposed Effort Sharing Regulation will strengthen the Member States' efforts to achieving their emissions reduction targets.
- A proposal for a profound restructuring of energy taxation, which will also have an impact on buildings.

The Renovation Wave strategy and action plan set a context and a pace for the upcoming EPBD revision. The inception impact assessment presented in this section gives an overview of where the European Commission is looking to upgrade actions. In addition, the impact assessment accompanying the Commission initiative on stepping up the EU's 2030 climate ambition highlights the role envisaged to be played by buildings in the green and digital transition.

2.1. Renovation Wave – Strategy and action plan to stimulate buildings' renovation for climate neutrality and recovery

At the current pace of refurbishment activities, it would take centuries to curb the curve of greenhouse gas emissions to net zero. Moreover, between 85 % and 95 % of existing buildings in the EU will be standing in 2050 and 75 % of them are considered energy inefficient.³² These figures underline the well-known fact that energy performance of new and existing buildings is a central pillar in reaching the EU's climate objectives.

The European Green Deal³³ presents a vision of a fair transition towards a climate-neutral continent by the middle of this century. The overarching vision of the Green Deal is put into practice in strategies and action plans followed up by regulatory, financing and enabling measures. The Renovation Wave³⁴ takes a holistic approach to the potential of the building sector to pave the way towards climate neutrality.

The aim of the **Renovation Wave** is a triple win as outlined in its title – green our buildings, create jobs and improve lives. Whilst the Commission recognises the substantial progress attained in the energy performance of buildings, it underlines the need to upgrade EU-level actions. The current level of buildings renovation remains too low and slow compared to EU climate targets. To this end, the Renovation Wave presents an action plan of 23 legislative and non-legislative initiatives grouped in eight themes and seeking to at least double the annual energy renovation rate of residential and non-residential buildings by 2030 and foster deep energy renovations. These

³² Renovation Wave COM(2020)662; S. Shnapp, Paci, D. and Bertoldi, P., Untapping multiple benefits: hidden values in environmental and building policies, EUR 30280 EN, Publications Office of the European Union, Luxembourg, 2020, JRC120683.

³³ COM(2019)640.

³⁴ COM(2020)662.

integrated actions intend to mobilise forces at all levels and stimulate the economy and green recovery.

The Renovation Wave is based on seven key principles:

- energy efficiency first;³⁵
- affordability – making energy-performing and sustainable buildings widely available;
- decarbonisation and integration of renewables;
- life-cycle thinking and circularity;
- high health and environmental standards;
- tackling the twin challenge of green and digital transitions together;
- respect for aesthetics and architectural quality.³⁶

Actions to incentivise renovation from all different angles are spread over the 2020-2024 period and are interlinked in various ways. The action plan includes three horizontal focus areas: energy poverty and the renovation of the worst performing dwellings; the decarbonisation of heating and cooling; and the exemplary role of public buildings. These areas are covered by several EU-level measures. They should be considered priorities in terms of policy actions and funding because of their potential to influence renovation rates, their ability to generate energy savings and their positive impact on wider effects, such as healthier and more comfortable living. The Renovation Wave also raises the question of upskilling workers and attracting new talents in line with the sustainable competitiveness measures of the Green Deal and the European Skills Agenda followed by the Pact of Skills.³⁷

The revision of the EPBD is directly mentioned under the theme of strengthening information, legal certainty and incentives for renovation. A reference to the revision of the energy performance certificates and a proposal to incrementally introduce mandatory minimum energy performance standards for all types of buildings are also mentioned. In the context of ensuring reinforced, accessible and more targeted funding supported by technical assistance, the proposed actions mention a possible introduction of a deep renovation standard in the EPBD. The Renovation Wave suggests that the Commission will also examine opportunities of introducing measures on phased renovations including among others digital building logbooks and a building renovation passport.

In terms of bridging the persistent investment gap, unprecedented amount of EU direct funding is allocated through notably the MFF and the Recovery Facility, ReactEU, the Just Transition Fund and the Modernisation Fund. In addition, the Commission announces its intention to revise the General Block Exemption Regulation and the Energy and Environmental Aid rules for building renovation. A clarification of the scope of State aid is expected to facilitate the co-financing of InvestEU guarantees by the Member States. Alongside the above mentioned opportunities, the Renovation Wave emphasises the importance of attracting private investment in various ways, such as energy-efficiency obligation schemes, a deep renovation standard, public-private partnerships and green-loan and mortgage financing.

³⁵ Article 2(18) of the Governance Regulation (EU) 2018/1999, Green Deal COM(2019)640 and EU Strategy on energy system integration COM(2020)299, and proposal for a recast of the Energy Efficiency Directive COM(2021)558.

³⁶ In this context, the New Bauhaus initiative supports the transformation of living habits building on the heritage of the Bauhaus-movement of the 1920s and 1930s. It contributes to renovation by supporting the fusing of new technologies and circular economy principles with craftsmanship, cultural heritage and public space conservation principles.

³⁷ European Skills Agenda COM(2020)274, Pact of Skills launched on 10 November 2020.

The Commission will monitor progress on renovation by using the mechanisms set out in the Regulation on the Governance of the Energy Union and the European Semester. This emphasises in particular the role of national climate and energy plans (NECP) and long-term renovation strategies.

2.3. Content of the expected revision

The Commission published an **inception impact assessment** on the revision of the Energy Performance of Buildings Directive 2010/31/EU followed by a public consultation that closed on 22 June 2021. Together with the Renovation Wave, the inception impact assessment³⁸ gives an overview of the scope of the upcoming revision and offers an outlook to the ex-ante impact assessment accompanying the Commission proposal, to be published by the end of the year.

According to the Commission inception impact assessment, the revision of the EPBD will focus on delivering the essential elements of the Renovation Wave and reducing emissions in the whole lifecycle of buildings. The aim is a strong legal framework towards decarbonisation of buildings, with a focus on at least doubling the renovation rate by 2030 and fostering substantial deep renovation.

The inception IA provides three options. The baseline scenario involves no policy change. This would mean ensuring complete and correct transposition and implementation of the existing EPBD with a review in 2026 as foreseen in the directive. The second option proposes to reinforce implementation with non-legislative measures, such as additional guidance, technical assistance, information campaigns etc. Option three introduces amendments to the EPBD in order to incorporate the Renovation Wave actions and bring the increased decarbonisation ambition into the legislation.

The Commission brings forward a set of possible areas and provisions that are open for revision or introduction. One of them is a phased introduction of mandatory minimum energy performance standards for different types of buildings. In this context, the Commission also mentions supporting policies to ensure affordable housing. Other central elements include an updated framework of energy performance certificates with a focus on increased quality and availability, greater harmonisation and better access to data; introduction of a building renovation passport; and introduction of a deep renovation standard. In order to align the EPBD with the new climate objectives, requirements for new buildings and measures fostering sustainable mobility are mentioned together with the need to develop a new vision for buildings. Moreover, the inception impact assessment highlights the requirements for emission reduction throughout the lifecycle of buildings taking into account resource efficiency and circular principles. Requirements for the digitalisation of buildings, principles of climate resilience as well as health and environmental standards are listed in this context.

The **impact assessment accompanying the Commission initiative on stepping up Europe's climate ambition**³⁹ puts buildings at the centre of actions, which must be intensified, for decarbonising the economy and moderating energy demand. In the area of energy efficiency, buildings have a particularly large potential for energy savings. In all scenarios of the impact assessment, buildings generate the largest greenhouse gas reduction levels by 2030. This can be countered by a switch in fuels, meaning a larger number of renewables in the energy mix, combined with an increase in renovations, notably deep renovations, providing a more sustainable and long-term impact than the lighter renovation options. As the number of dwellings is on the rise, the

³⁸ Inception Impact Assessment, Ref. Ares(2021)1397833 - 22/02/2021

³⁹ Impact Assessment SWD(2020)176 accompanying the document Stepping up Europe's 2030 Climate Ambition COM(2020)562.

moderation of energy demand should beat this trend in order for the building sector to be efficient and bring awaited results.

The impact assessment points out that heating and cooling together represent the single largest energy use in buildings. Energy renovations aimed at lowering demand for heating and cooling implement the 'energy efficiency first' principle, whereby reducing energy demand is the most effective contribution to decarbonisation. A more efficient uptake of smart building technologies brings the same result. As the energy demand of buildings is expected to rise, various actions on different fronts are necessary to reach the decarbonisation target. Central elements in this effort are the electrification of the demand, combined with the decarbonisation of the supply, through the use of more renewables, including self-generated renewables, and the reduction of carbon fuels in the energy mix.

The preliminary assessment of expected impacts highlights the potential wider benefits that could be obtained through the increased energy performance of buildings. It considers likely that an increased building renovation rate and an increased amount of deep renovation will have a positive economic effect on both GDP and jobs, especially in the companies engaged in the building sector, a majority of which are SMEs. In addition, the reduction in energy demand and the reduced demand for fossil fuels will generate a positive impact on energy security. Social impacts are expected to be positive in terms of local-level job creation as well as improved comfort and sanitary conditions. Energy poverty is expected to diminish, as better energy performance contributes to lower energy bills. However, the upfront investment that needs to be made, which might be significant, has been identified as requiring supporting measures to facilitate funding of renovation.

The assessment of environmental impact recognises the need to balance between waste generation and resource efficiency throughout the whole lifecycle of buildings. Major gains could be obtained if buildings could turn into carbon sinks through green infrastructure. Reduced energy consumption and consumption of fossil fuels should yield many wider benefits, such as a decrease in air pollution. In terms of the administrative burden, increased regulatory requirements might increase the level of bureaucracy while a more aligned regulatory framework should bring synergies on many levels.

3. Evaluation of the EPBD: An overview of its performance

This section describes the available documentation on the EPBD's performance. Due to the limited availability of material on the ex-post impact of the latest revision, it refers mainly to the evaluation report on the 2010 EPBD and to subsequent EC progress reports.

3.1. Ex-post evaluation and impact assessments

The **evaluation report**⁴⁰ on the performance of the 2010 EPBD made an evidence-based assessment of the effectiveness, efficiency, relevance, coherence and EU added value of the directive based on the experience amassed and progress made during its application. The scope of the report covered the impact of the 2002 EPBD and the 2010 EPBD, looking in greater detail at the transposition and application of the 2010 recast.

⁴⁰ SWD(2016)409 Executive summary of the evaluation of Directive 2010/31/EU on the energy performance of buildings accompanying the proposal COM(2016)765 and SWD(2016)408 Evaluation of Directive 2010/31/EU on energy performance of buildings.

The evaluation report concluded that the EPBD delivered both on its general and its specific objectives. However, developments following the publication of the evaluation report have revealed that the EU risks failing to reach its energy efficiency target for 2020.⁴¹ In terms of the more specific objectives, the combination of minimum requirements and energy performance certificates has proved to be efficient for new buildings. The nearly zero-energy buildings target for new buildings by 2020 has mobilised stakeholders. The cost-optimal methodology for new and existing buildings has been an efficient approach in steering existing national energy performance levels towards cost-efficient levels.

The evaluation report found that the biggest challenge in the coming decades will be to increase the rate, quality and effectiveness of renovations, with a view to tapping into the large cost-effective energy-saving potential of existing buildings. In this context, it referred to Member States' long-term renovation strategies, which at the time were prepared under Article 4 of the EED, and underlined their role in increasing renovation rates in EU countries as well as mobilising finance and investment. It identified the lack of attractive financing products on the market as part of the reason for the limited renovation rate. Regarding national certification schemes for the energy performance of buildings and independent control systems, the evaluation report noticed that these were at an early stage of implementation in several Member States. While highlighting that their usefulness could be enhanced, the report acknowledged their positive impact on encouraging consumers to buy or rent more energy-efficient buildings and on sending a demand-driven market signal.

The evaluation report did not detect any serious regulatory failures, though it made recommendations on ways to increase the impact of the EPBD in the future. It also pointed out that corrective actions – such as simplifying and streamlining outdated measures, enhancing compliance by fine-tuning existing provisions and better linking them with financial support – could be taken.

Conclusions of the evaluation report on the five areas of ex-post impact assessment:

- i) The EPBD has been **effective** in making a clear positive change in the energy performance of buildings following the application of the 2002 EPBD since 2006. The EPBD has contributed effectively to the modernisation of the Member States' buildings codes by: introducing a minimum requirement for existing buildings; the cost-optimal concept; and the nearly zero-energy standard. The EPBD has strengthened the adoption of minimum energy performance requirements in national building codes compared to the previous situation, where only a few EU countries had been applying cost-optimal solutions to determine the levels of minimum performance requirements. Moreover, the share of renewables in final energy consumption is steadily increasing and direct GHG emissions have been reduced. According to Commission calculations, the EU legal acts in the area of EU energy-effective policies have had a significant impact on jobs, mainly in SMEs.⁴²
- ii) The EPBD has been an **efficient** tool allowing stakeholders to get hold of useful and relatively low-cost information in support of their decision-making. It has furthermore afforded Member States flexibility in applying and implementing its provisions at the national level, thereby helping them to avoid overly burdensome situations.

However, the evaluation report listed several areas where the national implementation of the EPBD could be more efficient. These included, inter alia, streamlining the method of calculating the energy

⁴¹ Energy Union Report, COM(2020)950.

⁴² Direct and indirect jobs associated with energy renovation of the EU building stock amount to 720 000, including 148 800 related to new business opportunities.

performance of buildings and ensuring the operation of NZEB provisions, fully applicable from January 2021 onwards. The report noted that increasing the clarity of the main elements of the EPBD could result in enhanced efficiency, which requires a more holistic approach to the EPBD's implementation, and a reduction of the administrative burden.

iii) The EPBD has shown its **relevance** as a legal instrument and its mechanisms support the EU's ambitions for energy savings and better performing buildings, although certain barriers block the possibilities to fully exploit this potential. The transposition of the EPBD into national building codes has contributed to the adoption of GHG reduction targets across the EU. Furthermore, the energy performance of buildings is recognised for its capacity to deliver social co-benefits.

To increase its relevance further, the EPBD needs to: take financial institutions on board and help them provide more efficient support; enforce the message that high energy performance in buildings requires both energy efficiency and renewable energy measures; and bring more attention to the advantages brought by technological progress.

iv) The EPBD is both externally and internally **coherent**. No internal contradiction exists in its interventions and it is aligned with other EU legislation pursuing the same objectives.

v) Improving the energy performance of buildings is essential in reaching the greenhouse gas reduction target. The **EU added value** of the EPBD is channelled through its contribution to larger common climate targets in the building and construction sectors under the Effort-Sharing Regulation. The EU level intervention is justifiable in order to ensure a proportionate level of harmonisation in the transformation of the EU countries' building stock.

3.2. Assessment of the progress of EPBD implementation

The uptake of nearly zero-energy performance buildings and the establishment of cost-optimal energy performance requirements are subject to regular scrutiny by the Commission.⁴³

A Commission report assessing the **progress made by the Member States** towards the implementation of the Energy Efficiency Directive, the deployment of nearly zero-energy buildings and the implementation of the cost-optimal minimum energy performance requirements was published in 2020.⁴⁴ The findings confirm that energy efficiency obligation schemes are an effective policy tool for achieving energy savings, although the report also reveals that 12 Member States are unlikely to reach their targets under Article 7 of the EED. Overall, the assessment found that most Member States had adopted the cost-optimal approach in an appropriate way, allowing them to set requirements for three categories: new, existing and nearly zero-energy buildings.

In 2020, 23 EU Member States had already established a definition for NZEBs, while the remaining four were in the process of developing or revising their definitions. The number of NZEBs across the

⁴³ Both cost-optimal minimum requirements and NZEB targets differ across Member States, taking into account technology, cost-variation of different measures as well as national economical and climate conditions.

⁴⁴ Report COM(2020)954 from the Commission to the European Parliament and Council, 2020 assessment of the progress made by Member States towards the implementation of the Energy Efficiency Directive 2012/27/EU and towards the deployment of nearly zero-energy buildings and cost-optimal minimum energy performance requirements in the EU in accordance with the Energy Performance of Buildings Directive 2010/31/EU; Energy union governance regulation EU 2018/1999.

This assessment of the integrated national energy and climate plans fulfils the reporting obligation under Article 9(5) EPBD on the uptake of the number of nearly zero-energy buildings and update on the cost-optimal levels of minimum energy performance requirements for buildings according to Article 5(4) EPBD.

EU have increased significantly since the introduction of this requirement. Over 2012-2016, the EU average uptake of nearly zero-energy buildings went from 14 % to 20 %. Over the last decade, the NZEB requirements have been gradually tightened, being now 70 % more ambitious than the national cost-optimal minimum performance requirements.

The 2020 report confirmed the trends already reported in a Commission study from 2019⁴⁵ and in the Commission progress report from 2016,⁴⁶ and observed that the market is dominated by renovation activities that contributed only little to energy performance or primary energy savings.⁴⁷ Almost all Member States submitted cost-optimal calculations, though with a significant potential for cost-effective energy savings between the minimum energy performance requirements in place and the cost-optimal levels. Cost-optimal energy performance benchmarking has paved the way for achieving the NZEB targets. Significant differences in the uptake of NZEB requirements were revealed in newly constructed buildings, where these requirements had gained ground, compared to the refurbishment of existing buildings, where their uptake was low.

Better information on national building stocks and better inclusion of renewable energy were identified in the study as areas that require effort. Building renovation passports were mentioned as a complementary optional scheme to make a renovation roadmap for individual buildings taking into account cost-effective measures and avoiding a tendency to opt for light or medium energy-saving renovations.⁴⁸

4. Positions and views of EU institutions

4.1. European Council

The European Council has taken a leading role in setting the strategic guidelines on EU climate and energy targets and expressing the common commitment at the level of **Heads of State or Government**. Over time, the European Council has managed to reach agreement on the EU climate goals and to progressively raise the level of ambition taking into account international developments. In June 2010, EU leaders backed up the Europe 2020 strategy, and in October 2014, committed to long-term objectives according to the 2030 Framework for Climate and Energy. Since then, the EU leaders have addressed EU climate and energy targets regularly in their meetings and have shown a strong commitment towards the Paris Climate Agreement and its implementation by gradually raising the level of the EU's obligations.⁴⁹

The Energy Performance of Buildings Directive has not been mentioned in any European Council conclusions. However, the European Council has repeatedly called for the Commission, co-

⁴⁵ The Comprehensive study of building energy renovation activities and the uptake on nearly zero-energy buildings in the EU, European Commission, 2019 final report.

⁴⁶ Report COM(2016)464 from the Commission to the European Parliament and the Council, Progress by Member States in reaching cost-optimal levels of minimum energy performance requirements.

⁴⁷ One off deep renovations leading to more than 60 % primary energy savings were estimated to be only around 0.2-0.3 % and weighted annual energy renovation rate around 1 % in terms of affected floor area.

⁴⁸ With a view to the future option of facilitating deeper energy renovations, the Commission launched a study on the buildings renovation passport. For more details, see Technical study on the possible introduction of building renovation passport, European Commission, 2020 Final report.

⁴⁹ Suzana Anghel, Ralf Drachenberg, Anastiina Papunen, Key issues in the European Council: State of play in October 2020, study, EPRS, 2020.

legislators and Member States to introduce, adopt and implement the relevant legislation in this area. In December 2020, the European Council agreed to reduce greenhouse gas emissions by at least 55 % by 2030 as compared to 1990 levels – a target EU Member States should meet collectively – and committed to carbon neutrality by 2050. The latest expression of the EU leaders' views, in their May 2021 conclusions, reaffirmed their previous commitments, welcomed the co-legislators' agreement on the Climate Law and invited the Commission to present its fit for 55 package.⁵⁰

4.2. European Parliament positions and written questions

The European Parliament has adopted a non-legislative resolution on the Renovation wave and on the Green Deal. Members of the Parliament have used their right to pose written questions related to this policy area under Rule 138 of the Parliament's Rules of Procedure.

4.2.1 European Parliament positions

In its September 2020 resolution on the **Renovation Wave**,⁵¹ the European Parliament underlined the Member States' unique opportunity to achieve the goal of an energy-efficient and climate-neutral building stock by 2050 and simultaneously stimulate the construction and renewable energy sectors. In this context, it invited the Commission to ensure the accurate implementation of the EPBD, place the 'energy efficiency first' principle at the heart of the EU renovation wave, and revise the EU legislation so as to incorporate the trajectory towards climate and energy targets for 2030 and the target of climate neutrality for 2050. In addition, the Parliament called on the Member States to comply with their obligation under the EPBD and submit their long-term renovation strategies. The Parliament recalled the importance of standards and suggested that a minimum energy performance standard should be set to encourage deep renovation, including staged renovations of the worst performing buildings. It also called for a building renovation passport. In addition, it highlighted digitalisation and reliable data as drivers of energy efficiency, welcoming, for example, the promotion of the smart readiness indicators of buildings.

The Parliament stated that energy efficiency renovation should be prioritised and asked for the co-legislators to ensure the necessary funding for the European economic recovery plan and the respective funds from the MFF, including technical assistance. Measures to alleviate energy poverty were emphasised and the role of the Just Transition Fund was underlined in the context of the Covid-19 post-crisis recovery plan.

The Parliament called on the Commission to launch an EU skills and information initiative in the renovation and building sectors offering training and qualifications in order to upskill and reskill the workforce. Moreover, the Parliament highlighted the role of sharing knowledge and experiences in all levels, and called for one-stop-shops and platforms.

In its January 2020 resolution on the **European Green Deal**,⁵² the European Parliament welcomed the objective of achieving carbon neutrality by 2050. It called for an ambitious EU climate law with a binding target of net greenhouse gas emissions by 2050, with national and economy-wide targets,

⁵⁰ European Council meeting (10 and 11 December 2020) – Conclusions 22/20 and Special meeting of the European Council (24 and 25 May 2021) – Conclusions EUCO5/21.

⁵¹ European Parliament resolution on maximising the energy efficiency potential of the EU building stock 2020/2070(INI) 17/9/2020 - Renovation wave. See also Commission answer SP(2020)597-02.

⁵² European Parliament resolution of 15 January 2020 on the European Green Deal 2019/2956(RSP) - 15/01/2020. See also Commission answer SP(2020)278.

as well as an intermediate target of reducing GHG emissions by 55 % compared to 1990 levels by 2030. The Parliament invited the Commission to revise the EU legislation and to present proposals in order to deliver the increased climate objectives by June 2021.

The Parliament stressed the urgency of facing the transformation required for living within planetary boundaries and expressed its position on the various elements of the Commission's Green Deal communication. It also called for a new and ambition EU adaptation strategy and underlined the importance of the 'energy efficiency first' principle.

The Parliament expressed its view that a just transition between all EU regions, including a Just Transition Fund, is essential in reaching a carbon-neutral economy. It called on the Commission to propose a comprehensive financing plan with the aim of stimulating public and private investments at all levels and addressing the considerable financing needs necessary to meet the objectives of the Green Deal. It called for a mechanism that would ensure good coordination and coherence between all EU policies, financing instruments and investments. The Parliament also referred to the revision of the State aid guidelines and underlined that this revision should abolish subsidies to coal and fossil fuels in the EU and provide guidance in line with the Green Deal strategic objectives.

4.2.2 A selection of written questions

On 26 March 2021, Dan-Ștefan Motreanu, (EPP, Romania) raised a question about the **level of ambition of the long-term renovation strategies**.⁵³ He referred to a study of a sample of Member States representing over half of Europe's population. The study found that the level of ambition of the LTRs under scrutiny was not sufficient to reach EU's climate objectives as regards decarbonising Member States building stocks. The MEP requested what actions the Commission plans to take to align the Member States' LTRs with the EU's climate neutrality objective by 2050.

In her answer of 16 June 2021, Energy Commissioner Kadri Simson referred to the Commission analysis on 13 long-term renovation strategies published in November 2020 and to the comprehensive analysis that will be published once all LTRs are submitted. The commissioner noted that several EU countries need to step up their efforts in decarbonising their building stock by 2050 and highlighted that the Commission provides dedicated advisory services to all Member States. The Renovation strategy and action plan and the revision of the EPBD underpin this aim. The Commission highlighted that the Recovery and Resilience Facility and its flagship Renovate provide funds to incentivise energy efficient renovations leading to the decarbonisation of the building stock in line with the EU climate objectives.

On 26 February 2021, Kim Van Sparrentak and Bas Eickhout (Greens/EFA, the Netherlands), posed a question to the Commission on the framework for **energy efficiency renovation loans**.⁵⁴ They underlined the urgent need to tackle energy poverty as well as the climate crisis and asked whether the Commission is planning to introduce a framework for standardised energy efficient buildings renovation loans.

In her answer of 8 May 2021, Energy Commissioner Kadri Simson mentioned the Renovation Wave and the Commission recommendation on energy poverty, and pointed out that in this context the

⁵³ E-001709/2021, https://www.europarl.europa.eu/doceo/document/E-9-2021-001709_EN.html and answer https://www.europarl.europa.eu/doceo/document/E-9-2021-001709-ASW_EN.html

⁵⁴ E-001150/2021, https://www.europarl.europa.eu/doceo/document/E-9-2021-001150_EN.html and answer https://www.europarl.europa.eu/doceo/document/E-9-2021-001150-ASW_EN.html

Commission is committed to revising the regulatory, financial and governance framework for buildings renovations. In accordance with the renewed sustainable finance strategy, the Commission reflects on the introduction of standards and labels for sustainable financial products aimed at creating a more standardised framework for energy efficiency investment. In this regard, the Commission works on developing the taxonomy and on presenting guidance to put in practice the 'energy efficiency first' principle. In practice, building renovation is largely driven by local or regional actors. To this end, the European Investment Bank has put forward demand-driven schemes together with local intermediary banks in support of buildings renovation.

On 2 June 2020, Gianantonio Da Re (ID, Italy) referred to the conclusions drawn in the European Court of Auditors Special Report 11/2020 and asked what actions the Commission planned to take to guide the **project selection towards better use of public funds**.⁵⁵ The ECA Special Report 11/2020, which examined the use of cohesion funds for energy efficiency renovation in five Member States, revealed that the selection of projects is not driven by a cost-benefit analysis.

The Commission replied (25 August 2020) that it is always looking for ways to improve the efficient and effective use of financing instruments that implement the principles of sound financial management. In terms of funding buildings renovations, the Commission pointed to the Smart Finance for Smart Buildings facility, launched in 2016 to reduce the risks and costs of financing energy renovations. In terms of upcoming reviews, it underlined that the cost-effectiveness of energy efficiency investments is one of the key priorities of the Renovation Wave and that it will be taken into account in the revision of the financial instruments and in appropriate supporting tools covering the design or implementation of financial products. As regards cohesion funds, it is the managing authority that must ensure compliance with rules, guidance and provisions. In the management of cohesion policy funds during the 2021-2027 MFF, the Commission encourages managing authorities to include parameters in their processes linking the investment to targeted or achieved energy savings.

4.3. Council of the European Union

The Council held an informal video conference with the EU-27 environmental ministers on 23 June 2020. The ministers agreed that the **European Green Deal** should guide the economic and other related measures in kick-starting a green recovery post-coronavirus pandemic.⁵⁶

The Transport, Telecommunication and Energy (TTE) Council published its conclusions on the **EU Renovation Wave** on 11 June 2021 (fn 9413/21). The Member States endorsed the strategy's goal to double the number of energy renovations in the EU by 2030 in line with the circular economy and measures to tackle energy poverty. They welcomed the envisaged steps aimed at achieving emission cuts as a means to reduce energy consumption. The ministers highlighted the importance of social inclusion and reminded that increased energy efficiency reduces costs for households, improves quality of life and ensures a just transition. They also underlined the central role of the

⁵⁵ E-003302/2020, https://www.europarl.europa.eu/doceo/document/E-9-2020-003302_EN.html and answer https://www.europarl.europa.eu/doceo/document/E-9-2020-003302-ASW_EN.html

⁵⁶ Informal Videoconference of Environment Ministers – Contribution of environmental and climate policies to the recovery from COVID-19 Brussels, 23 June 2020, Presidency Summary, <https://www.consilium.europa.eu/en/press/press-releases/2021/06/11/council-approves-conclusions-on-an-eu-renovation-wave/>

building and construction sectors in stimulating the economic recovery post the Covid-19 pandemic by creating jobs.⁵⁷

The TTE Council also recognised the importance of complementary policies to boost building renovation, mentioning especially eco-design, environmental and energy labelling measures in working out cost-efficient energy savings in heating and cooling.

4.4. European Economic and Social Committee

On 9 June 2021, the European Economic and Social Committee (EESC) published an opinion⁵⁸ on the **Green Deal**, titled No Green Deal without a Social Deal. In this opinion, the EESC made a strong statement that while the EU undertakes actions to tackle climate change, it should also show global leadership on social responsibility. By referring to its own words, the EESC emphasised that the post-pandemic recovery should be based on 'protecting human and social rights, democratic values and the rule of law, unlocking the full potential of the Single Market, achieving the Sustainable Development Goals (SDGs), creating a circular economy and achieving climate neutrality in the EU by 2050 at the latest'. In this context, the EESC stressed the importance of a just transition for Europe and made detailed observations regarding its content. The EESC called also for companies to contribute within their particular capacities and supported the initiatives rooted in sustainable corporate governance. A key component of ecologically, socially and economically sustainable corporate governance is a forward-looking social dialogue.

On 24 February 2020, the EESC issued an opinion on the **Renovation Wave for Europe**,⁵⁹ welcoming and supporting it, and stating that such a strategy is an absolute necessity. The holistic approach of the Renovation Wave should be closely linked to long-term investment in the general interest, sustainable development, the green transition and the effective implementation of the European Pillar of Social Rights with regard to sustainable and affordable housing. The EESC underlined the importance of a clear legal and financial framework to enable the transition. The comments and recommendations expressed in the opinion give an overview of the prominent role that buildings renovation can play, according to the EESC.

4.5. European Committee of the Regions

In its 19 March 2021 opinion on the **Renovation Wave**,⁶⁰ the European Committee of the Regions (CoR) welcomed the strategy and action plan as well as the European Commission's proposal to work in close partnership with the CoR. The CoR underlined the need to revise and update the legislative framework according to the Renovation Wave action plan, while stressing the principles of subsidiarity and proportionality. It recognised the pivotal role of the local and regional authorities in guaranteeing adequate policies and in ensuring that buildings renovation meets land use and town planning criteria.

⁵⁷ Conclusions on a renovation wave that repairs the economy now, and creates green buildings for the future, 8923/21, 808/1/21/REV1.

⁵⁸ Opinion of the European Economic and Social Committee of 9 June 2021, INT/903-EESC-2020-01591-00-00-AC-TRA.

⁵⁹ Opinion of the European Economic and Social Committee 24 February 2021, TEN/723-EESC-2020-04884-00-010AC-TRA.

⁶⁰ Opinion of the European Committee of the Regions 17-19 March 2021, ENVE VII/08, COR-2020-02786-00-00-AC-TRA.

The Committee of the Regions considered it essential to incorporate and find synergies between the actions under the Renovation Wave and funding available under the Recovery and Resilience Facility and the European structural and investment funds. In this context, it highlighted that the operational implementation and funding takes place in regions, cities and municipalities. Moreover, the CoR expressed strong support for the new Bauhaus initiative, which enlarges the scope of buildings renovation from a technical and regulatory approach to an aesthetics- and design-oriented one. The opinion offered a comprehensive account of the complex issues related in various ways and levels to local and regional policies.

In its opinion on the **Climate Pact** of 14 October 2020,⁶¹ the CoR welcomed the **European Green Deal** initiative and voiced its support for achieving the initiative's objectives post Covid-19. The EU must act as a global leader in tackling climate change, said the Committee of the Regions, and stressed the urgency to raise awareness in order to build resilient territories. Keeping the most vulnerable regions in the loop and ensuring a social and economic just and fair transition is key for the success of all. The CoR underlined the necessity of multilateral cooperation, such as the Covenant of Mayors initiative and other forms of climate and energy-related cooperation of local and regional authorities, which should be strengthened in order to trigger local action. The CoR voiced its readiness to support actions related to the Green Deal and the post-pandemic recovery together with the Commission and other partners. The role of the CoR in this regard has been enhanced through a commitment on its part to promote the efforts of local and regional authorities in the implementation of the Green Deal through a Green Deal Local Working Group.

4.6. European Court of Auditors

The European Court of Auditors has published two special reports – of 2012 and 2020 – on the energy efficiency of buildings since the recast of the EPBD.⁶² Both reports focus on the cost-effectiveness of energy renovation projects managed under the cohesion fund. They analyse the benefits gained per euro invested, identify areas of improvement and make specific recommendations for the future.

Special report 11/2020 assessed the cost-efficiency of EU co-funded energy efficiency investments in buildings, by analysing projects related to energy renovation of buildings in five Member States⁶³ with a total allocation of €2.9 bn. The report showed sub-optimal use of EU funds and authorities' failure to incentivise deep renovation. The reasons why authorities failed to make cost-effective choices included inter alia lack of a comparable assessment of project merits and lack of information on thresholds, which makes it hard to compare relative costs and benefits.

In its response to the report, the Commission recognised the work accomplished by the ECA and underlined that the EU budgetary resources should be used in an economical way. Meanwhile, it pointed out that the Green Deal had been launched, as had the Renovation Wave strategy and action plan. The Commission accepted the ECA's recommendation on planning and targeting investments, but only partly accepted the remarks on project selection procedures and the performance ranking system. While the Commission acknowledged cost-effectiveness as one of the

⁶¹ Opinion of the European Committee of the Regions 12-14 October 2020, ENVE VII/007, COR-2020-01360-00-00-AC-TRA.

⁶² Special report 11/2020: Energy efficiency in buildings: greater focus on cost-effectiveness still needed and Special Report 21/2012: Cost-effectiveness of Cohesion Policy Investments in Energy Efficiency.

⁶³ Bulgaria, Czechia, Ireland, Italy and Lithuania.

key elements of project selection criteria, it pointed out that there is often a need to consider the broader context of cohesion policy objectives in line with EU Financial Regulation. Project selection considers multiple objectives and possible co-benefits, and therefore making only a purely economic analysis fails to portray the full picture. The importance of financial instruments in this area and the need for continued actions to promote their use will be taken into account also in the next programming period.

Special report 21/2012 assessed whether the programming and financing conditions were correctly set to ensure cost-effective results and whether energy-efficiency projects carried out in buildings were cost-effective. The report covered three Member States⁶⁴ and four programmes with a sample of 24 projects in public buildings. The special report concluded that cost-efficiency does not drive project planning, nor does it drive the selection phase or the monitoring of EU spending on energy performance of buildings. The link between national energy efficiency plans and cohesion fund projects was reported to be broken. The ECA recommended to the Commission to improve this linkage by stepping up its guidance in this field and to ensure transparency of information, use of comparable indicators and clarity of project selection criteria.

In its reply, the Commission reminded that the energy efficiency policy has undergone a dynamic change since the period under scrutiny. The ECA audit was conducted before the first national energy efficiency plans were established and only addressed public projects. Whilst the Commission acknowledged some of the findings, such as the need for good quality energy audits, the subsequent development of the legislative framework addressed many of them. Here too, the focus on only one set of factors determining the project selection was put in a larger context by referring to multiple integrated cohesion policy goals, not only energy efficiency or cost-effectiveness, but also the overall improvements of a particular building and its wider effects.

The two special reports drew similar conclusions on the weak points, despite the fact that they were published within eight years of each other. They made similar recommendations for the future, including, i) better allocation of public funding for the energy renovation of buildings; ii) application of cost-benefit indicators; and iii) introduction of rewarding measures to enhance project management. They also underlined the importance of implementing existing Commission guidance. Furthermore, the virtuous circle of sharing best practices was highlighted by both ECA reports.

4.7. European Investment Bank

Delivering on the EU climate targets requires making long-term investments. The European Investment Bank (EIB) supports these activities by using EU financial instruments under its mandate to leverage private funding. In 2020, the EIB published a report on its **energy lending policy**, which it updated in 2019 based on an ex-post evaluation of its previous energy lending policy.⁶⁵

The 2020 report describes the EIB's updated energy lending policy, which seeks to increase the EIB's role in the area of lending. It seizes the momentum by reflecting on the developments of the EU climate and energy legal framework, focusing on the long-term investment needs of energy transformation and on increased access to finance. Focus on long-term energy investment is complemented with the phasing out of fossil fuel-reliant energy projects in due time. The energy

⁶⁴ Czechia, Italy and Lithuania.

⁶⁵ EIB energy lending policy: Supporting the energy transformation, EIB, 2019.

lending policy covers all EIB activities in the sector regardless of the channel, from financial support to advisory services and technical assistance. The EIB created a strategic partnership with the Commission and intends to strengthen its dialogue with the Member States in order to better bridge the investment gap and support the overall investment required within its mandate.

The EIB's updated energy lending policy has four themes: unlocking energy efficiency; decarbonising energy supply; supporting innovative technologies and new types of energy infrastructure; and securing enabling infrastructure. Energy efficiency investments are mainly directed to residential buildings. The EIB has been active in this area for several years now and has been upgrading its support, for example, by establishing a new European initiative for building renovation.

5. In-depth review of the Member States' long-term renovation strategies

Each EU Member State has to establish a long-term energy renovation strategy (LTRS) with a detailed plan on how to transform residential and non-residential buildings, both public and private, into highly energy-efficient and decarbonised ones by 2050. Article 2a EPBD defines the current content of and procedure for adopting an LTRS. The original requirement for the adoption of an LTRS was introduced in 2012 in the Energy Efficiency Directive and was later transferred to the 2018 Energy Performance of Buildings Directive. This move strengthened the strategy's content and its alignment with other aspects related to the energy performance of buildings. The ongoing third round of drafting and adoption of LTRSs translates into practice the reinforcement of building policies – now taking increasingly into account issues such as the adoption of adequate financing solutions, the alleviation of energy poverty, the incorporation of new techniques, and renewable energy.

5.1. LTRS: Scope, content and procedure

Long-term renovation strategies are a national roadmap facilitating the cost-effective transformation of existing buildings into nearly zero-energy buildings across the EU. LTRSs are submitted every three years to the Commission, which assesses them and has the duty to circulate best practices among the EU countries. The Commission supports the implementation of the directive with a recommendation and dedicated guidance to the Member States.⁶⁶ This recursive approach enables the Commission to draw conclusions based on the Member States' practical experience and to create a feedback loop in order to support continuous improvement. The Member States' role is to establish and put their long-term renovation strategies into action, while also taking national and local conditions into account.

The overall aim of long-term renovation strategies is to accelerate the cost-effective rate and depth of renovation of existing buildings. Article 4 of the EED, which governed them until the revision of the EPBD in 2018, included only five mandatory elements, whereas Article 2a of the EPBD takes a considerably broader view, by including a reference to:

- energy poverty;
- health, safety and air quality;
- initiatives to promote smart technologies, skills and education;

⁶⁶ Recommendation (EU) 2019/786.

- policies targeting the worst-performing segments of national building stocks;
- the split-incentives dilemmas;
- market failures;
- public buildings.

LTRSs cover the national building stock, comprised of public, private, residential and non-residential buildings. They provide information and data on this stock, on policy measures put in place to boost the rate and depth of renovation, and on an estimate of the expected energy savings.

The 2018 revision of the EPBD introduced new and broader obligations as well as new areas of policy and action to be covered. According to the Commission recommendations, a long-term renovation strategy must present a comprehensive set of measures and policies to achieve a highly efficient and decarbonised building stock by the middle of this century, including a cost-effective transformation of existing buildings into nearly zero-energy ones. This includes a roadmap with measures and measurable indicators and indicative milestones for 2030, 2040 and 2050. As regards new policy areas, information on financing support at Member State level and mobilisation of investment should be included.

Table 1 – Scope and content of long-term renovation strategies under Article 4 of the EED and Article 2a of the EPBD

Article 4 EED	Article 2a EPBD
Overview of the national building stock based, as appropriate, on statistical sampling	Overview of the national building stock
Identification of cost-effective approaches to renovation relevant to the building's type and climatic zone	Identification of cost-effective approaches to renovation relevant to the building's type and climatic zone. Consider relevant trigger points in the life-cycle of the building
Policies and measures to stimulate cost-effective deep renovations of buildings, including phased deep renovations	Policies and actions to stimulate cost-effective deep renovation of buildings, including staged deep renovation and support to targeted cost-effective measures and renovation
	Overview of policies and actions to target the worst-performing segments of the national building stock, split-incentives dilemmas and market failures, and outline of relevant national actions that contribute to the alleviation of energy poverty
	Policies and actions to target all public buildings
	Overview of national initiatives to promote smart technologies and well-connected buildings and communities, as well as skills and education in the construction and energy efficiency sectors
Evidence-based estimate of expected energy savings and wider benefits	Evidence-based estimate of expected energy savings and wider benefits such as those related to health, safety and air quality
	Roadmap with measures and domestically established measurable progress indicators and indicative milestones for 2030, 2040 and 2050. Specify contribution to achieving the EU's energy efficiency target
Forward-looking perspective to guide investment decisions of individuals, the construction industry and financial institutions	Facilitate access to appropriate financial mechanisms to support the mobilisation of investment. List of criteria a)-e)
	The Commission collects and disseminates best practices on successful public and private financing schemes and financial incentives. EU countries may address fire safety and risks related to intense seismic activity affecting renovations during the life time of the building.

In addition to the above-mentioned **content requirements**, the Energy Performance of Buildings Directive places requirements as regards the compilation **procedure**. According to Article 2a (5), an LTRS should be underpinned by a public consultation allowing a thorough consultation of stakeholders and the incorporation of national specificities. Moreover, Article 2a(6) states that an ex-post review of the previous long-term renovation strategy should be part of the preparation procedure.⁶⁷

The Member States submitted their first long-term renovation strategies to the Commission in 2014 and a second time in 2017. While the Member States' long-term renovation strategies were governed by the Energy Efficiency Directive, they were reported to the Commission as part of the national energy efficiency action plans every three years.⁶⁸ After these strategies were moved to Article 2a of the EPBD, they started being submitted to the Commission as part of the biannual integrated national energy and climate plans.⁶⁹

The ongoing third round of drafting and adoption of LTRSs is special and different from the preceding two. The revised climate targets and the context of the fit for 55 package combined with EU actions to stimulate economic recovery from the pandemic have affected the submission of the strategies: originally due by 10 March 2020, they have been submitted over 2020 and the summer of 2021. In July 2021, all but one LTRS were reported to the Commission.⁷⁰

The different speed of submission of the LTRSs has created a situation where some Member States have taken into account the recent developments concerning the EU's response to the Covid-19 crisis together with further steps on more ambitious EU climate and energy policy, while others have not taken these issues into account. For example, the Renovation Wave was launched in October 2020, roughly half a year after the original deadline for LTRS submission. This of course deeply affects the comparability of the long-term renovation strategies. It might also include a risk that those countries that submitted their LTRSs early have not been able to take fully into account the changed conditions and possibilities, which might lead to a situation where LTRSs are not used to their full potential. However, early submission combined with a high level of ambition might indicate a willingness to invest in renovation regardless of the additional drivers that emerged later.

5.2. Studies on and analysis of the long-term renovation strategies

The regular studies and analyses of the long-term renovation strategies conducted by the Commission and the Commission's Joint Research Centre trace the steps towards a more comprehensive approach and offer insight into their compliance with the EPBD provisions.

The Commission Joint Research Service **studies on the first two rounds of the long-term renovation strategies**⁷¹ show an increase in compliance with the main elements of the relevant provisions. In 2017, the majority of LTRSs were fully or almost fully compliant by almost doubling their level of compliance compared to 2014. The inclusion of more robust scenario analysis

⁶⁷ In practice, this means that LTRS should be accompanied by an annex of the results of the public consultation and an annex detailing the implementation of its most recent LTRS.

⁶⁸ Directive and Commission guidance plus first round in 2014 and second round in 2017.

⁶⁹ Article 2a(8) of the EPBD, Governance Regulation (EU) 2018/1999 and EC Recommendation (EU)2019/786.

⁷⁰ All LTRSs are published on the following website: https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/long-term-renovation-strategies_en.

⁷¹ L. Castellazzi et al., Assessment of second long-term renovation strategies under the Energy Efficiency Directive, Publications Office of the European Union, Luxembourg, JRC114200.

presenting alternative options for intervention gathered positive remarks. The analysis found that energy poverty gained weight in the 2017 strategies and was addressed by the majority of them. The report highlighted data collection and the description of the national building stock as areas requiring improvement. Weaknesses were also identified in the evaluation and monitoring of implemented policies and in the documentation of the wider benefits attained by energy savings.

The Joint Research Centre is working on an in-depth completeness check of the third round of long-term renovation strategies, similar to those published on the two previous rounds. The Commission came out with a **preliminary analysis of the national long-term renovation strategies** in March 2021.⁷² The analysis is divided into three parts: An overall assessment of the long-term renovation strategies of 13 Member States; a list of existing and planned measures with highlights of best practices; and an analysis of each long-term renovation strategy based on a standardised template. Once all LTRs have been submitted, the analysis will be updated to cover all Member States.

Whilst regretting the delayed submission of the long-term renovation strategies, the Commission gives credit to the Member States for generally respecting the requirements of Article 2a of the EPBD. The Member States have committed to different indicative milestones for 2030, 2040 and 2050 and to a corresponding set of policy measures and budget allocations. Unfortunately, the completeness of the LTRs varies as do the data provided by the Member States, which reduces the overall comparability of the strategies. Some Member States have not provided data on GHG emissions reduction, which makes it impossible at this stage to assess the overall contribution of the LTRs in tackling climate change to date.

According to the Commission analysis, the Member States show broad support for stimulating renovation through actions such as ensuring easier access to financing, introducing measures to increase technical support and promoting advisory tools such as one-stop-shops. All assessed long-term renovation strategies recognised the importance of ensuring well-targeted financing and included a chapter on it (Section 5.4 takes a closer look at the national actions on stimulating renovation through funding).

The Commission analysis contains a description of the various measures applied by the 13 Member States as well as their best practices, to serve as a potential source of inspiration to the remaining Member States. At the same time, it highlights the challenges of direct comparability of actions and measures tailored for national, regional or local conditions.

The Commission has been in contact with the Member States to help accelerate the submission of their LTRs and to provide guidance in drafting them. This action is timely taking into account the remarks made by the think-tank Building Performance Institute of Europe (BPIE). It unveiled in its study on LTRs a lack of adoption of the Commission recommendation, resulting in a lack of overall coherence and comparability of measures and data provided by the Member States. **In a recent publication, the BPIE examined 14 LTRs and assessed their compliance** with the requirements of Article 2a of the EPBD, including their content, scope and drafting procedure.⁷³

The BPIE publication found that compliance among the examined LTRs was sufficient or high as regards the overview of the national building stock, the policies and actions aimed at stimulating

⁷² Commission Staff Working Document SWD(2021)69, Preliminary analysis of the long-term renovation strategies of 13 Member States, 25.3.2020.

⁷³ Dan Staniase, Judit Kockat, Arianna Vitali Roscini, A Review of EU Member States' 2020 Long-term Renovation Strategies, Building Performance Institute Europe BPIE, 2020.

deep renovation, and the cost-effective approach to renovation. The majority of LTRSs address issues such as the worst-performing buildings, the dilemma of split-incentives, market failures and the targeting of energy poverty with policy measures. The requirements for smart technologies, well-connected communities and work on improving skills in this area were equally well fulfilled. The exemplary role of public buildings was present in most LTRSs as were mechanisms to mobilise investments.

Whilst national building stocks were generally well documented, information on the share of renovated buildings was not sufficient. Details on the implementation of the latest LTRSs were found to be a point that had been overlooked by about half of the Member States. The obligation to carry out a public consultation and report on its modalities was another requirement poorly followed by most Member States, as was the requirement to document the wider benefits of building renovation.

5.3. Connections and synergies between national long-term renovation strategies and other national plans related to post-Covid-19 economic recovery

Several complementary and interrelated national planning tools have to be taken into account in planning the long-term renovation strategies and in setting them into a broader context, notably the long-term strategies and national climate and energy plans. The current situation of post-pandemic recovery has highlighted the potential of buildings for kick-starting the green and digital economic recovery. The national recovery and resilience plans add a new planning element related to long-term renovation strategies as regards the selection of building renovation projects eligible for this type of funding.

5.3.1. Long-term renovation strategies and governance of the energy union

The monitoring measures built into the Energy Union Governance Regulation⁷⁴ require Member States to establish national long-term strategies reaching to 2050 and national climate and energy plans covering the 2021-2030 period. **Long-term strategies** (LTS) provide a plan on how to ensure, in all sectors of society, the economic transformation needed to achieve the climate goals set in the Paris Agreement and to support broader sustainable development goals. Reviewed every 10 years, they offer a reference point to the more precise national climate and energy plans, which are reviewed biannually. **National energy and climate plans** (NECP) contain targets, objectives, commitments as well as policies and measures to achieve them. The Commission assesses progress on these plans in its State of the Energy Union reports.

LTRSs, which present a roadmap of buildings renovation up to 2050, are submitted to the Commission as part of the integrated NECPs and should by definition be aligned with both long-term strategies and national climate and energy plans.

The Commission has repeatedly highlighted the importance of LTRSs as policy instruments. In the European Green Deal,⁷⁵ the Commission states that it will 'rigorously enforce the legislation related to the energy performance of buildings. This will start with an assessment of Member States' long-

⁷⁴ Energy Union Governance Regulation (EU) 2018/1999.

⁷⁵ COM(2019)640 The European Green Deal.

term renovation strategies'. The Renovation Wave communication for its part continues this message by underlining the importance of LTRS as tools for planning and for selecting priority projects to be funded. Moreover, the Commission has announced that it will monitor renovation progress in the context of the European Semester.

The latest **assessment on the integrated National Energy and Climate Plans for 2010-2030** under the Energy Union⁷⁶ revealed that EU would reach the level of ambition and even slightly overrun it in terms of greenhouse gas reduction and incorporation of renewable energy sources, but probably fall short on energy efficiency, though the decrease in energy demand during the time of the Covid-19 pandemic may lead to the EU to reach its 2020 energy efficiency target. All in all, the sum of national contributions falls short of the Union's level of ambition of 32.5 % in 2030. This collective ambition gap puts pressure to Member States to step up energy efficiency efforts beyond the current levels in the next decade to reach the objectives set for 2030. These efforts should beat the trend of raising energy consumption meaning a more widespread implementation of the energy efficiency first principle.

The assessment highlighted a lack of comparability between various measures and their overlapping nature between EED and EPBD, which made it difficult to assess the overall effect of combined measures and policies. The report highlighted the role of transparency as a mean to create better analysis on impacts and underlined the urgency to step up efforts towards clean energy transition by aligning national energy efficiency ambitions with the Paris Agreement.

5.3.2. Long-term renovation strategies and post Covid-19 recovery

The building and construction sector accounts for 2.4 % of total EU employment and for 3.6% of the total number of enterprises in the EU (figures are from 2018). Due to the Covid-19 crisis, it suffered from an estimated decrease in construction activities of 20-25 % in 2020-2021, but is now seen as one of the kick-starters of the post-Covid-19 green and digital economic recovery.⁷⁷

The EU's response to the pandemic is the Next Generation EU initiative, a temporary recovery instrument. Its cornerstone is the Recovery and Resilience Facility offering €672 billion in grants (€312.5 billion) and loans (€360 billion). It includes seven flagship initiatives of which two have a strong renovation component, notably Power Up, covering new technologies and renewables; and Renovate, directly targeting the energy efficiency of buildings. All in all, effective implementation of the Next Generation EU is estimated to deliver 2 % of additional gross domestic product by 2024 and contribute to the creation of 2 million jobs.⁷⁸

The Member States are invited to introduce projects eligible for funding in their **national recovery and resilience plans**, which have to be consistent with initiatives supporting the green and digital transition, such as the national long-term strategies and the national climate and energy plans. The recovery and resilience plans overlap with these long-term strategies and climate and energy plans in particular as regards the green transition, focusing on issues such as building renovation, energy-

⁷⁶ COM(2020)564 – An EU-wide assessment of National Energy and Climate Plans Driving forward the green transition and promoting economic recovery through integrated energy and climate planning; M. Economidou et al., National Energy and Climate Plans for 2021-2030 under the EU Energy Union, EUR 30487 EN, Publications Office of the European Union, Luxembourg, 2020, JRC122862.

⁷⁷ Eurostat (sbs_sc_sca_r2) https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Construction_of_buildings_statistics_-_NACE_Rev._2 and Eurostat (sts_copr_m), https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Impact_of_Covid-19_crisis_on_construction.

⁷⁸ Commission communication COM(2020)456, Europe's moment: Repair and Prepare for the Next Generation.

efficiency of buildings, affordable housing and deployment of renewables. In the case of a proposed project related to building renovation, compliance with the national long-term renovation strategy must be ensured. Furthermore, a prerequisite to unlock funding from the Recovery Facility is alignment with the European Semester country-specific recommendations.⁷⁹

The Commission guidelines encourage the Member States to examine how specific investments or policies and measures set out in the national energy and climate plans could be fast-tracked in the context of the recovery and resilience plans.⁸⁰ For their part, the national energy and climate plans are expected to highlight areas that could support the recovery of the EU economy and contribute to the post-Covid-19 recovery.⁸¹ ⁸² In the context of the Commission communication on the annual sustainable growth strategy 2021, Member States are encouraged to focus on most mature and innovative projects in line with EU policy objectives supporting the green and digital transition.⁸³ The resources Member States receive from the Recovery and Resilience Facility will be additional to the funding received from other EU sources.⁸⁴

Table 2 – Comparison of national strategies and plans related to energy savings and renovations

	Legal basis	Content in brief	Contribution	Deadline	Review cycle
Long-term renovation strategy (LTRS) - Part of the integrated NECP	Article 2a of the EPBD	Long-term strategy to support renovation of national building stock with the view of decarbonisation by 2050	Guide national building renovation activities	March 2020	Three years
National climate and energy plan (NECP)	Energy Union Governance Regulation	Maps the Member States' planned contribution to the EU climate and energy target for the 2021-2030 period Covers five key elements of the energy union: - decarbonisation; - energy security; - energy efficiency; - internal energy market; - research, innovation and competitiveness	Measure and monitor EU progress as a whole towards achieving climate and energy targets Contribute to the State of the Energy Union report	End of 2018 draft plans, end of 2019 final plans	Two years

⁷⁹ Adopted by the Council in 2019 and 2020.

⁸⁰ Commission Staff Working Document SWD(2021)12 – Guidance to Member States on their recovery and resilience plans.

⁸¹ COM(2020)564 An EU-wide assessment of National Energy and Climate Plans Driving forward the green transition and promoting economic recovery through integrated energy and climate planning.

⁸² The Annual Sustainable Growth Strategy 2021 COM(2020)575 mentions this in relation to the European Semester documents - The national recovery and resilience plans will become for the next years the main reference documents on forward-looking policy initiatives providing an integrated overview of reforms and investments in line with the objectives of the Recovery and Resilience Facility.

⁸³ Given the rather short period of 2023 for committing the money under the Recovery and Resilience Facility.

⁸⁴ Commission communication COM(2020)575, Annual Sustainable Growth Strategy 2021.

	Legal basis	Content in brief	Contribution	Deadline	Review cycle
Long-term strategy (LTS)	Energy Union Governance Regulation	A perspective of at least 30 years GHG reduction target Emission reduction and enhancements of removals in individual sectors Expected progress trajectory of the transition Expected socioeconomic effects	National long-term strategies with view to 2050 to meet the commitments of the Paris Agreement and objectives of the energy union	1 January 2020	Revise every ten years, update every five years
National recovery and resilience plan	Recovery and Resilience Facility	National plans for investments and reforms, including clear milestones and targets to be completed up to 2026 In line with the European Semester and the 2021 annual growth strategy	Mandatory requirement to benefit from the support of the Recovery and Resilience Facility	30 April 2021, extended until mid-2020	

5.4. Funding renovation

Over time, the European Union has introduced a variety of financial instruments to tackle the well-known challenge of the investment gap and barriers to renovation funding. Achieving the energy targets is estimated to require an increase by around €90 billion per year compared to the current 2030 climate and energy targets.⁸⁵

According to Article 2a of the EPBD, the Member States need to give companies and individuals access to a range of financial mechanisms to support the mobilisation of investments in order to put in practice the commitments and milestones set in their long-term renovation strategies. Moreover, Article 10 requires the Member States to ensure the effective application of financial measures related to energy efficiency, by linking them to the targeted or achieved energy savings as a result of the renovation. Over the 2021-2027 period, which covers the EU's current long-term budget and its plan to kick-start the economy after the coronavirus pandemic (Next Generation EU), financial support to incentivise renovations is expected to grow sizeably, combining public investments and successfully leveraged private financing.

5.4.1. Financial instruments to bridge the persistent funding gap

High upfront investment, long payback time, lack of data on performance, complexity of financing and project management, lack of adequate and affordable financing instruments are all examples of barriers to energy renovation investment.⁸⁶ Improvement of financial instruments has been recognised as an essential tool to leverage funding from both public and private resources and to

⁸⁵ Commission communication COM(2020)562, Stepping up Europe's 2030 climate ambition – Investing in a climate-neutral future for the benefit of our people; Commission Staff Working Document SWD(2020)550, Support from the EU budget to unlock investment into building renovation under the Renovation Wave.

⁸⁶ Accelerating clean energy in buildings, Annex 1 COM(2016)860; P. Zangheri et al, Building energy renovation for decarbonisation and Covid-19 recovery, EUR 30433 EN, Publications Office of the European Union, 2020, JRC122143.

tackle the barriers downgrading the amount and scale of building renovation for all categories. The Renovation Wave communication underlines the urgent need to intensify these actions with the aim of providing adequate and well-targeted funding.

The Smart Finance for Smart Buildings initiative (SFSB) accompanying the clean energy for all Europeans package⁸⁷ was launched at the same time as the revision of the EPBD. In addition to emphasising the sustainable energy potential of buildings, it seeks to overcome the financial, technical, administrative and social barriers and thereby create favourable conditions for stakeholders to undertake necessary investments. Through its three pillars, the SFSB initiative aims to boost the energy efficiency renovation markets by de-risking investments, by offering assistance and aggregation and by ensuring more effective use of public money. Funding will be channelled via the European Fund for Strategic Investment, based on cooperation between the Commission and the EIB, and the European structural and investment funds.

The Commission recommendation⁸⁸ on long-term renovation strategies refers to the Smart Finance for Smart Buildings initiative in the context of the obligation for Member States under Article 2(3) of the EPBD to facilitate access to mechanisms as a way to support the mobilisation of investments. The Commission recommendation gives a non-exhaustive list of generic examples of types of financial mechanisms covering the following five areas in which the EPBD requires the Member States to take action:

- aggregation of projects, including by investment platforms or groups and by consortia of small and medium-sized enterprises, to enable investor access as well as packaged solutions for potential clients;
- reduction of the perceived risk of energy efficiency operations for investors and the private sector;
- use of public funding to leverage additional private-sector investment or address specific market failures;
- channelling of investments into an energy-efficient public building stock, in line with Eurostat guidance; and
- development of accessible and transparent advisory tools (such as one-stop-shops for consumers) and energy advisory services on relevant energy efficiency renovations and financing instruments.

No studies or reports are yet available on the performance of the SFSB initiative. However, the Commission refers to its ability to stimulate financing for building renovation, promoting the combination of a guarantee facility with grants and technical assistance in the staff working document accompanying the Renovation Wave. The Commission continues by informing that lessons learnt from the SFSB will underpin the design of EU guarantee-backed dedicated financial products under the InvestEU.⁸⁹

In its above-mentioned **analysis of 13 long-term renovation plans**,⁹⁰ the Commission remarked that all of them included the development of advisory tools focussing on energy efficiency renovations and financial instruments. This is in line with Article 2a(3) requiring Member States to

⁸⁷ Accelerating clean energy in buildings, Annex 1 COM(2016)860.

⁸⁸ Commission Recommendation (EU) 2019/786 of 8 May 2019 on building renovation

⁸⁹ SWD(2020)550 Support from the EU budget to unlock investment into building renovation under the Renovation Wave.

⁹⁰ Commission Staff Working Document SWD(2021)69, Preliminary analysis of the long-term renovation strategies of 13 Member States

promote adequate financing instruments to citizens and business and Article 20(2) requiring them to develop accessible and transparent advisory tools for owners and tenants. The Commission highlights of best practices include stimulating joint procurements by aggregating projects, including by setting up investment platforms or groups and consortia, as well as by enabling joint procurement across borders. The Commission highlights several good practices that have helped to reduce the perceived risk of energy efficiency projects; one involves government participation, which makes the projects more attractive to investors and the private sector. Similarly, programmes using different types of financial instruments are mentioned as regards the use of public funding, to leverage additional private-sector investment or address specific market failures.

Some Member States use tax credits or an adapted VAT rate to encourage buildings renovation. Good examples can also be found in the area of dedicated financial products and business models used to incentivise the sustainable energy renovation of buildings. Green mortgages/loans/credit offer private consumers, municipalities and regions possibilities to borrow money for specific sustainable renovation activities. For example, the capital of green bonds is reserved for projects and activities that help improve the environment and are eligible according to the green project requirements set by the party issuing them.⁹¹

5.4.2. EU investment in renovation in the context of post-pandemic recovery

The 2021-2027 MFF and NGEU provide targeted opportunities for supporting renovation-related reforms across the EU countries with a climate mainstreaming target of 30 %. The EU allocation for energy-efficient buildings has been significantly upgraded, combining direct EU funding with private financing and complementing these with investment in research and innovation.⁹²

The MFF and the Recovery and Resilience Facility (RRF) flagships **Renovate** and **Power Up** have a central role. The overall capacity of the Recovery and Resilience Facility reaches a total of €672.5 billion divided into grants and loans, which can provide funding for building renovation initiatives through Renovate and Power Up. The MFF and cohesion policy has played a major part in the past and continues to do so in 2021-2027. Direct EU funding, notably through the cohesion funds of the MFF and the Renovation component of the Recovery and Resilience Facility, will provide the biggest share together with React EU, the Just Transition Mechanism and the Modernisation Fund. The contribution of these funds estimated in the Staff Working Document accompanying the Renovation Wave:

- EU cohesion policy funds, the European Regional Development Fund, the European Social Fund and the Fund for European Aid for the Most Deprived, can support essential investment related to the Green Deal objectives (for example, energy and resource efficiency in the building sector) (about €330 billion).
- ReactEU, underpinned by NGEU funding, offers additional financial support until the end of 2023 (about €47.5 billion).

⁹¹ For more information: in a recent study, the Commission's Joint Research Centre explored how to finance renovation in residential buildings. It focussed on current and emerging direct financial instruments primarily targeting the improvement of energy efficiency, by making an EU-wide assessment of their uptake, characteristics, benefits and challenges, and their applicability to the residential building stock. It also looked into why the current level of investment remains sub-optimal despite different attempts to resolve the lack of financing. See also, M. Economidou, V. Todeschi and P. Bertoldi, Accelerating energy renovation investments in buildings, EUR 29890 EN, Publications Office of the European Union, JRC117816.

⁹² SWD(2020)550 Commission Staff Working Document SWD(2020)550, Support from the EU budget to unlock investment into building renovation under the Renovation Wave.

- The Just Transition Mechanism aims to alleviate the social and economic costs of those industries, economies and workers that face the biggest challenges in the transition towards climate neutrality (about €17.5 billion).
- The Modernisation Fund supports 10 lower-income Member States through investments to modernise their energy systems and make energy efficiency improvements, inter alia in buildings (about €14 billion).⁹³

EU public incentives to mobilise the necessary private investment have equally been reinforced significantly. The **Invest EU** programme will act as a single EU private investment support mechanism and the **LIFE** programme addresses market barriers to building renovation in several of its four sub-programmes. EU budget allocations for supporting research and innovation through the **Horizon Europe** programme continue to facilitate projects on sustainable buildings relaying on the experience amassed in the context of Horizon 2020.

6. Conclusion

The EPBD is a relevant part of the EU legislative framework, which has been revised and updated in order to reach the climate goals of increasing the reduction of greenhouse gas emissions from 40 % to 55 % compared to the 1990 levels by 2030 and becoming climate neutral by 2050. This enhanced ambition driven by the Green Deal and the European Climate Law has triggered the upcoming revision of the EPBD, to start by the end of 2021. Given the Commission assessment of national energy and climate plans, which showed a collective ambition gap as regards energy efficiency, the EPBD is even more relevant in terms of stepping up efforts in the next decade to reach commonly agreed objectives.

The upcoming revision of the EPBD seeks to incentivise deep renovation and increasing energy performance of the buildings in order to harvest the untapped potential so far overlooked due to social, economic and financial barriers. The focus is on doubling the amount and deepening the impact of energy renovations alongside their wider effects on society in terms of improved living comfort and health, alleviated energy poverty and new jobs. The Renovation Wave strategy and action plan spearheads this objective and puts the revision of the EPBD in a larger context.

The key question of the upcoming revision of the EPBD is: how to trigger incentives to renovate. Implementation is crucial in terms of the efficiency of the EPBD, which sets a minimum level of harmonisation at EU level, giving Member States flexibility in terms of transposition and implementation. This national leeway is important not only in terms of the principles of subsidiarity and proportionality but also in order to efficiently ensure impact at national, regional and local levels. For example, Member States differ in their nearly zero-energy buildings requirements and cost-optimal minimum energy performance requirements depending on technological capacity, cost-variation of different measures as well as national climate conditions.

While identifying areas of improvement, the evaluation report published ahead of the last revision of the EPBD highlighted some positive impacts of the EPBD measures. For example, energy performance certificates have had a significant impact in raising awareness on the energy

⁹³ SWD(2020)550 Support from the EU budget to unlock investment into building renovation under the Renovation Wave, The figures quoted in the SWD document are based on the conclusions of the European Council of 17-21 July 2020.

performance of buildings; they have furthermore contributed to the sharing of information on energy performance and helped in creating a demand-driven market for energy efficient buildings.

National long-term renovation strategies pave the way to achieving the decarbonisation of the building stock by 2050. Their roadmaps, milestones and policy as well as budgetary measures offer insight on national long-term commitments guided by the provisions of the EPBD. In the current situation of post-pandemic recovery, the LTRs have a central role in defining and channelling actions and investments in the area of building renovation, prominent in many national recovery and resilience plans made under the Recovery and Resilience Facility. Two out of the seven flagship initiatives of the Recovery and Resilience Facility, Renovation and Power Up, cover building renovation activities. Eligible building renovation projects must be aligned with the long-term renovation strategies, national climate and energy strategies and country-specific recommendations of the European Semester.

The forthcoming revision of the legal framework on energy performance of buildings, coupled with efforts to incentivise renovation through upgraded additional funding, aim to bring EU added value in practice. Now, the internal market of building and construction sees unique momentum to grow and contribute to a green and digital future through concrete projects.

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