Policy packages for a socially just renovation of residential buildings

Design options to implement EPBD Art.9(2)

BPIE

JustReno

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Introduction

The decarbonisation of the EU building stock is crucial to achieving the climate targets set out in the Paris Agreement and other international commitments addressing climate change. To set a clear roadmap for the decarbonisation of the building stock, the EU adopted a recast of the Energy Performance of Buildings Directive (EPBD) in 2024. It "*promotes the improvement of the energy performance of buildings and the reduction of greenhouse gas emissions from buildings within the Union, with a view to achieving a zero-emission building stock by 2050, taking into account outdoor climatic conditions, local conditions, requirements for indoor environmental quality, and cost-effectiveness.*" (Art. 1(1) EPBD).

The residential building stock plays a special role. The decarbonisation and transformation of the building stock is not only necessary to achieve climate targets – residential buildings consumed around 26% of the final energy in the EU in 2023 – but a key strategy to reducing energy poverty, providing affordable housing and improving health and socio-economic circumstances of building users. The report therefore explores the implementation of Art.9(2) with a particular focus on two main topics: addressing worst-performing buildings and vulnerable households.

Figure 1. Buildings within the Fit for 55 package

As depicted in Figure 1, the EPBD recast is part of a broader set of directives and initiatives that affect the buildings sector, particularly through the Fit for 55 package. The implementation of the EPBD is closely related to many other EU legislative acts such as the Renewable Energy Directive (RED III) and Electricity Market Design reform (EMD), the Energy Efficiency Directive (EED), the Social Climate Fund Regulation (SCF), the Emissions Trading Scheme II (ETS II) and the Effort Sharing Regulation (ESR).

The implementation of the main EPBD provisions must be included in the national building renovation plans (NBRPs, Art. 3 of the EPBD), supporting the objective of a zero-emission building stock by 2050. The EPBD includes milestones related to greenhouse gas (GHG) emission reductions, lower final energy demand and an increased renewable energy share. By 2050, the EU's building stock must exhibit nearly zero or zero energy demand, zero on-site carbon emissions from fossil fuels and minimal operational GHG emissions.[1]

The EPBDs overall objective is to be achieved – among other provisions – through (i) improving the energy performance of the non-residential building stock with the deployment of minimum energy performance standards (MEPS), and (ii) implementing a national trajectory for the progressive renovation of the residential building stock to reduce its average primary energy use. Figure 2 provides an overview of the implementation timeline and targets set by the EPBD, particularly highlighting aspects closely related to the residential building stock.[2]

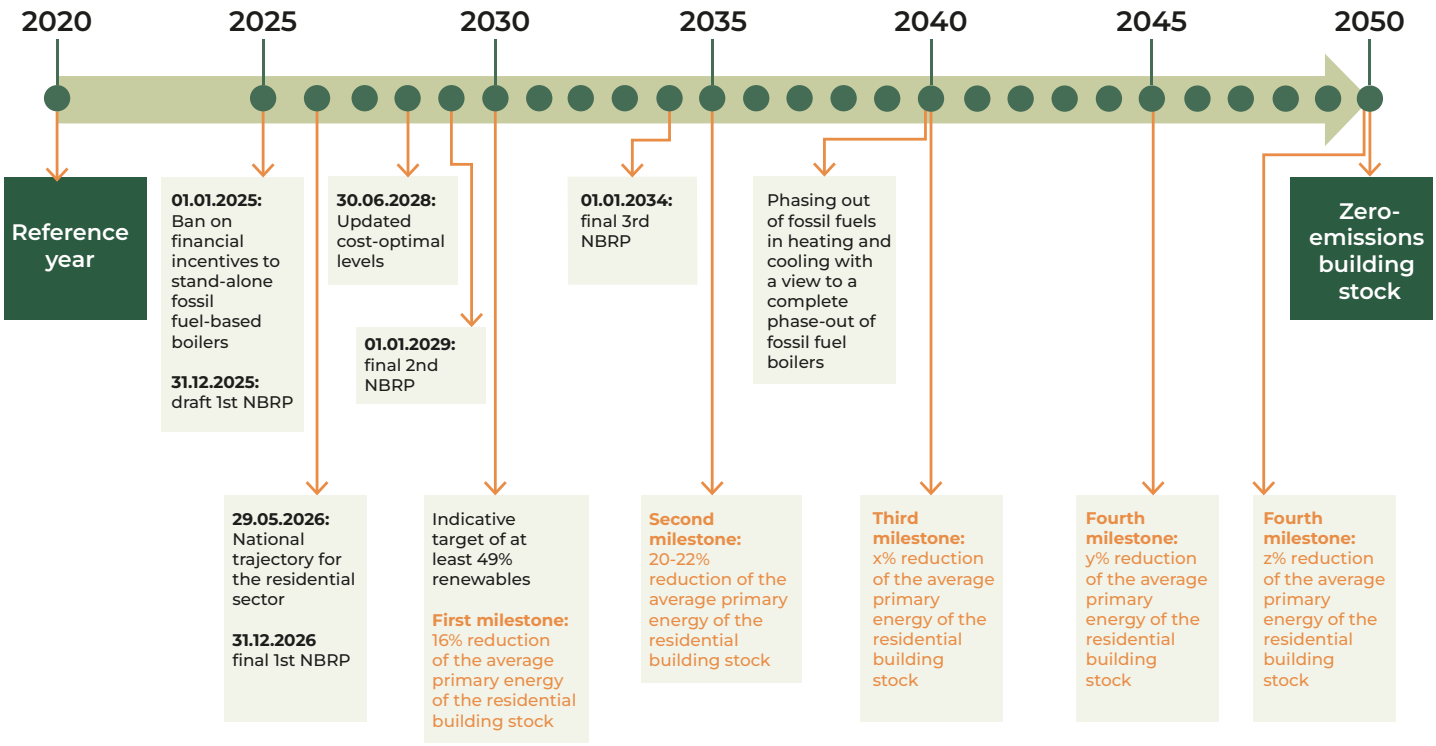

Figure 2. Implementation of EPBD Art.9(2) and other related provisions

This report focuses on the provisions related to the residential sector, particularly the design of a policy package to implement EPBD Art. 9(2), as detailed in the following section.

[1] Delivering the EPBD: A guide towards better, affordable and more resilient buildings for all in Europe

[2] Please note that the EPBD includes many other provisions with specific dates for delivery which are not presented in the figure but are still closely related to the transformation of the residential building stock. These provisions relate - among others - to the renovation of the non-residential building stock, the deployment of solar energy systems, zero-emission buildings and life-cycle global warming potential thresholds, the EPC framework, etc.

1.1 EPBD Art.9(2): progressive renovation of the residential building stock

EPBD Art.9(2) requires Member States to establish a national renovation trajectory to reduce the average primary energy use of the residential building stock. Starting with the average primary energy use of the residential building stock in 2020 as the reference, Member States must define a trajectory to reduce the average primary energy use by 16% by 2030, 20-22% by 2035, and subsequent milestones for 2040, 2045 and 2050 set by each Member State. At least 55% of these improvements must be achieved through the renovation of buildings from among the 43% worst-performing buildings. While the main metric is the average primary energy use, Member States can use complementary indicators related to GHG emissions, non-renewable primary energy use and renewable primary energy use.

To implement the trajectory, Member States must put in place measures such as MEPS, technical assistance and financial support programmes. The milestones and policies must be reported as part of the NBRP, including the total number or floor area of buildings to be renovated, together with the number and/or floor area of buildings from the 43% worst-performing segment. Figure 3 summarises the provisions of Art.9(2).

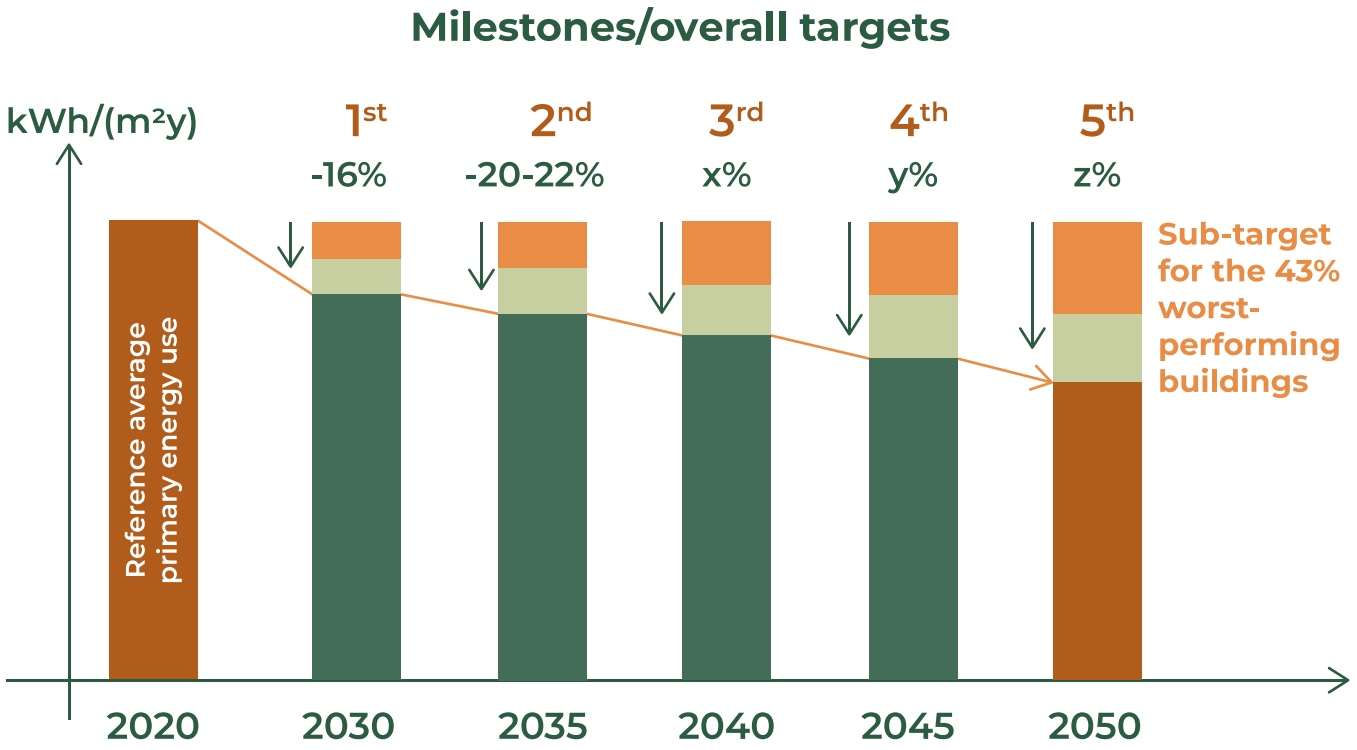

Figure 3. Overview of EPBD Art.9(2)

The implementation of Art.9(2) therefore requires multiple tasks:

- Understanding the energy performance of the residential building stock to establish the reference values for the trajectory and the threshold that defines the 43% worst-performing building segment.
- Establishing the milestones of the trajectory and determining the number or floor area of buildings to be renovated to achieve those milestones, considering the sub-target for the 43% worst-performing buildings.
- Designing a policy package to trigger and deliver the required renovations, aligning with provisions from other EU directives and strategies such as the EED, RED III, SCF, etc.
- Establishing monitoring and assessment mechanisms to track the progress of the trajectory and policy package and evaluate their effectiveness.

While these actions are described in a linear way, they are likely to require iterations. While carrying out these activities and efforts to implement Art.9(2), it is important to note that there are direct links to other EPBD provisions, especially in relation to vulnerable households, as described in the following section.

1.2 Overlap between EPBD Art.9(2), vulnerable households and worst-performing buildings

The EPBD highlights that *"inefficient buildings are often linked to energy poverty and socio-economic problems. Vulnerable households are particularly exposed to increasing energy prices as they spend a larger proportion of their budget on energy products."*

Vulnerability generally refers to a heightened risk of harm due to changes in external conditions or environments. In the context of building energy performance and energy prices, this can mean being exposed to rising energy prices, facing the risk of not being able to meet basic energy needs, and lacking the resources or options to respond effectively.[3] The EPBD defines vulnerable households as *"households in energy poverty or households, including lower middle-income households, that are particularly exposed to high energy costs and that lack the means to renovate the building that they occupy."*

This definition relates to the definition of energy poverty provided by the 2023 recast of the EED: *"a household's lack of access to essential energy services, where such services provide basic levels and decent standards of living and health, including adequate heating, hot water, cooling, lighting, and energy to power appliances, in the relevant national context, existing national social policy and other relevant national policies, caused by a combination of factors, including at least non-affordability, insufficient disposable income, high energy expenditure and poor energy efficiency of homes."*

[3] Identifying and supporting vulnerable households in light of rising fossil energy cost

Energy poverty has negative impacts on health, wellbeing, social inclusion and quality of life.[4] People affected by energy poverty suffer from inadequate comfort, deficient air quality and sanitary conditions, and exposure to harmful chemicals and materials, which may lead to lower productivity, health problems and higher mortality. The energy poor may also experience significant psychological stress over unaffordable energy bills and living conditions.

The concept of vulnerability is closely linked to buildings with poor energy performance. **Low energy efficiency/energy performance of buildings is one of the three most commonly identified causes of energy poverty** (the other two are low income levels and high energy prices).[5] While the concept of vulnerable households is not limited to energy poverty, low income has a straightforward connection with energy poverty as well. A recent study from the Joint Research Centre revealed that **about 30% of energy-poor households are also income-poor**, falling below the poverty threshold, but that middle-income households also face a relatively high incidence of energy poverty. At the same time, energy poverty further increases vulnerability.

Very often, energy-poor households live in the worst-performing buildings. Poor quality dwellings and appliances translate into higher amounts of energy needed to guarantee a comfortable and healthy way of living. Residents of the worst-performing homes must consume more energy to maintain thermal comfort.[6] Building renovation can play a key role in alleviating some of these circumstances. However, renovation usually comes at a high cost, limiting vulnerable households' access to the benefits of renovations and better-performing buildings. **This creates a harmful reinforcing loop, where limited economic resources prevent investment in improving their homes' energy performance**. As a result, households face high energy bills or must compromise on indoor comfort, perpetuating vulnerability.

The EPBD recognises the urgency of improving the performance of worst-performing buildings and the introduction of targeted measures for vulnerable groups. By requiring at least 55% of the energy improvements in the residential building stock to come from renovating buildings within the 43% worst-performing buildings, the EPBD prioritises the renovation of this building segment. At the same time, compared to the previous directive, the 2024 recast places higher emphasis on social aspects. The new directive includes legal definitions of concepts such as energy poverty. **It also requires that NBRPs are developed in consultation with civil society bodies representing vulnerable households.** Multiple provisions within Art.9(2) and the EPBD in general call for dedicated attention to vulnerable households.

Article 9 requires Member States that apply MEPS in the residential sector to develop:

- A mandatory enabling **framework to provide financial support and technical assistance to vulnerable households, people affected by energy poverty and people living in social housing**, including a requirement to monitor social impacts, especially for the most vulnerable households.
- **Monitoring mechanisms and penalties (for instance, through renting or selling restrictions for buildings falling into the three worst EPC classes).** Rules on penalties must consider homeowners' financial situation and access to adequate financial support, in particular for vulnerable households.

[4] Energy poverty in the EU
[5] Who's energy poor in the EU? It's more complex than it seems
[6] Introduction to the Energy Poverty Advisory Hub (EPAH) Handbooks: A Guide to Understanding and Addressing Energy Poverty

Article 17 requires Member States to:

- **Assess and address barriers related to upfront costs of renovations.**
- Ensure that **information about available funding and financial tools is accessible and transparent**, enabling vulnerable groups to benefit from support mechanisms.
- Introduce specific **safeguards to protect citizens, particularly tenants**, such as rent caps or targeted rent support.
- Address the risk of eviction of vulnerable households caused by disproportionate rent increases following energy renovation of their residential building or building unit.

Other provisions include:

- The **monitoring of energy poverty indicators** in NBRPs.
- The requirement to ensure that **energy performance certificates (EPCs) and renovation passports are affordable for all**, especially vulnerable households (Article 12, Article 19).

Although the EPBD recast may not explicitly address key social issues such as social inclusion, social cohesion, affordable housing and gender equality, these aspects are critical to ensuring a fair and equitable transition. Across the EU, cities are prioritising social inclusion and affordable housing,[7] while recent research[8] highlights the need for gender-responsive approaches and clearly defined gender equality objectives in implementing the Directive.

This report analyses the building stock, the existing policy framework and socio-economic aspects that Member States need to consider in order to design an effective policy package to implement EPBD Art.9(2) with particular attention to vulnerable households and worst-performing buildings. The report also elaborates on key themes that should be addressed by the final policy package for Art.9(2), including the worst-performing buildings, supporting vulnerable groups, promoting replicability, effective governance and other considerations.

- **Chapter 2 - Key contextual aspects for the implementation of EPBD Art.9(2)** discusses and summarises the key aspects that Member States should take into account when designing the policy package for the progressive renovation of the residential building stock as per EPBD Art.9(2).
- **Chapter 3 - Designing the policy package for the implementation of EPBD Art.9(2)** analyses elements that need to be addressed either by dedicated stand-alone policy instruments or by instruments embedded in the policy package for the implementation of Art.9(2).
- **Chapter 4 - Synthesis and recommendations** provides recommendations for Member States for the implementation of Art.9(2).

[7] Taking the pulse of European mayors
[8] Towards gender-responsive EU energy legislative acts for the buildings sector transformation by a structured Gender Impact Assessment

2 JustReno

Knowing the context: key aspects to implement EPBD Art.9(2)

The general workflow for analysing and implementing Article 9 can be divided into three main steps, illustrated in Figure 4: 1) Define the energy performance and segmentation of the building stock, 2) create renovation scenarios and policy instruments, and 3) determine the optimal renovation scenario and policy package.

In the first step, Member States collect and analyse data to characterise their residential building stock, establish the average primary energy use, and identify the 43% worst-performing buildings. The second step involves developing possible renovation scenarios based on the building segments being addressed, the renovation rates to be achieved, and the renovation depth. These scenarios should be analysed in combination with adequate policy instruments that can deliver the proposed renovation rates and depths. In the third step, the different scenarios and policy instruments are assessed against criteria relevant to each Member State (e.g., cost/benefit). Based on this assessment, Member States should select the most suitable combination of renovation pathways and policy instruments.

This analysis should be conducted considering that:

- Targets must be established for multiple periods with five milestones in 2030, 2035, 2040, 2045 and 2050.
- At least 55% of the energy savings must be achieved through the renovation of buildings that belong to the 43% worst-performing segment.
- The energy savings must be expressed in primary energy use, which is not only influenced by building renovation measures but also by the decarbonisation of the energy supply.

The overall analysis would produce:

- Selected renovation scenarios, including the estimated total floor area and/or the number of buildings to be renovated.
- Expected energy savings for all the targeted building segments.
- The total floor area or number of buildings and total energy savings to be achieved from the renovation of the 43% worst-performing buildings.
- The policy package required to implement the selected renovation scenarios.

These results serve as inputs to define the trajectory for progressively upgrading the residential building stock in line with the requirement of EPBD Art.9(2).

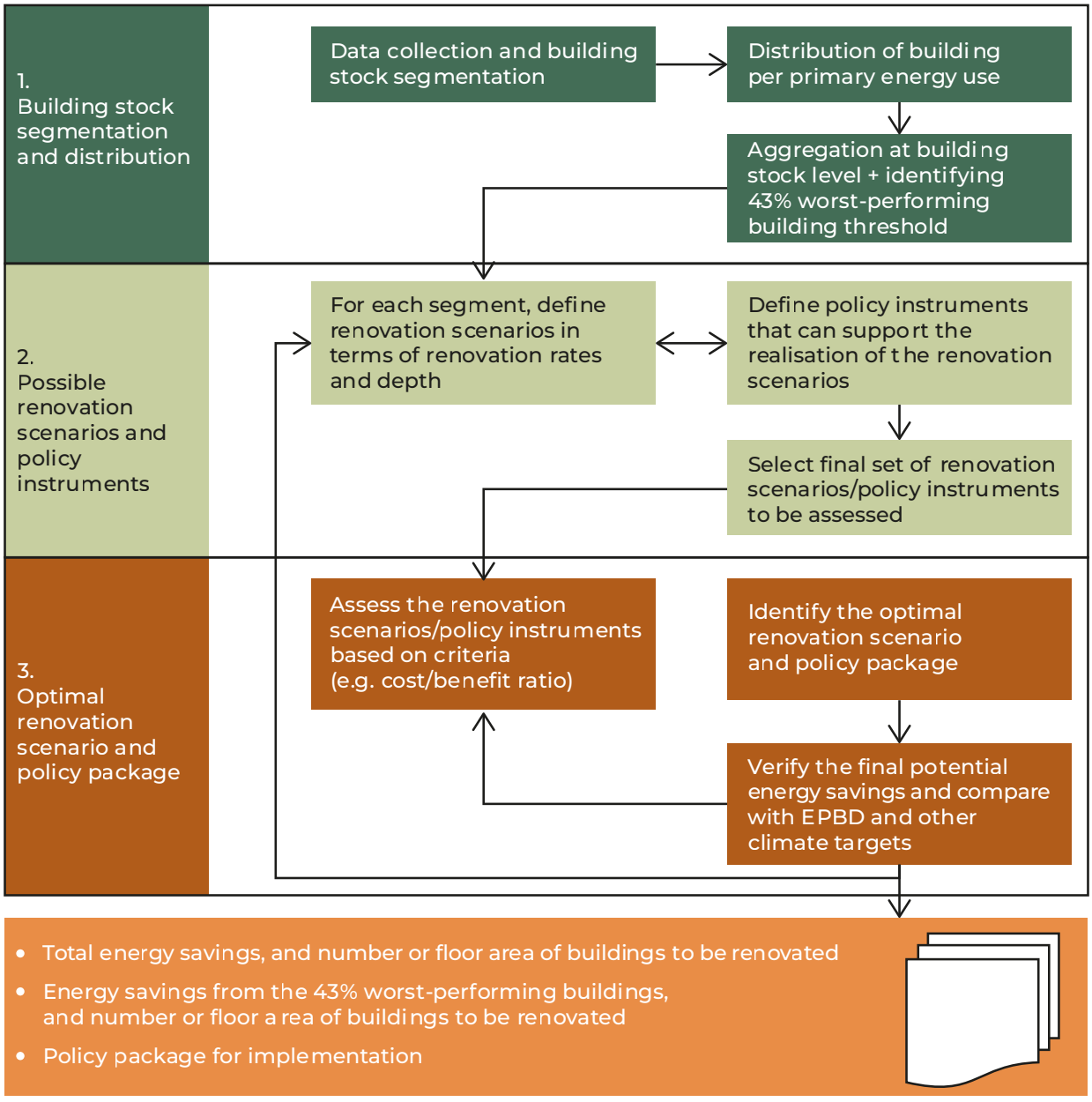

Figure 4. Generic analysis for EPBD Article (2) implementation[9]

[9] Adapted from Making choices for home renovation: A guide for an effective implementation of EPBD Article 9.2

As illustrated in Figure 5, the focus of this report is on the design of the policy package in step 2 of the general workflow described above. The purpose is to highlight what Member States must to ensure that the renovation scenarios and policy instruments are both feasible and able to deliver the renovation and EPBD targets for the residential sector, particularly with regard to vulnerable households and worst-performing buildings.

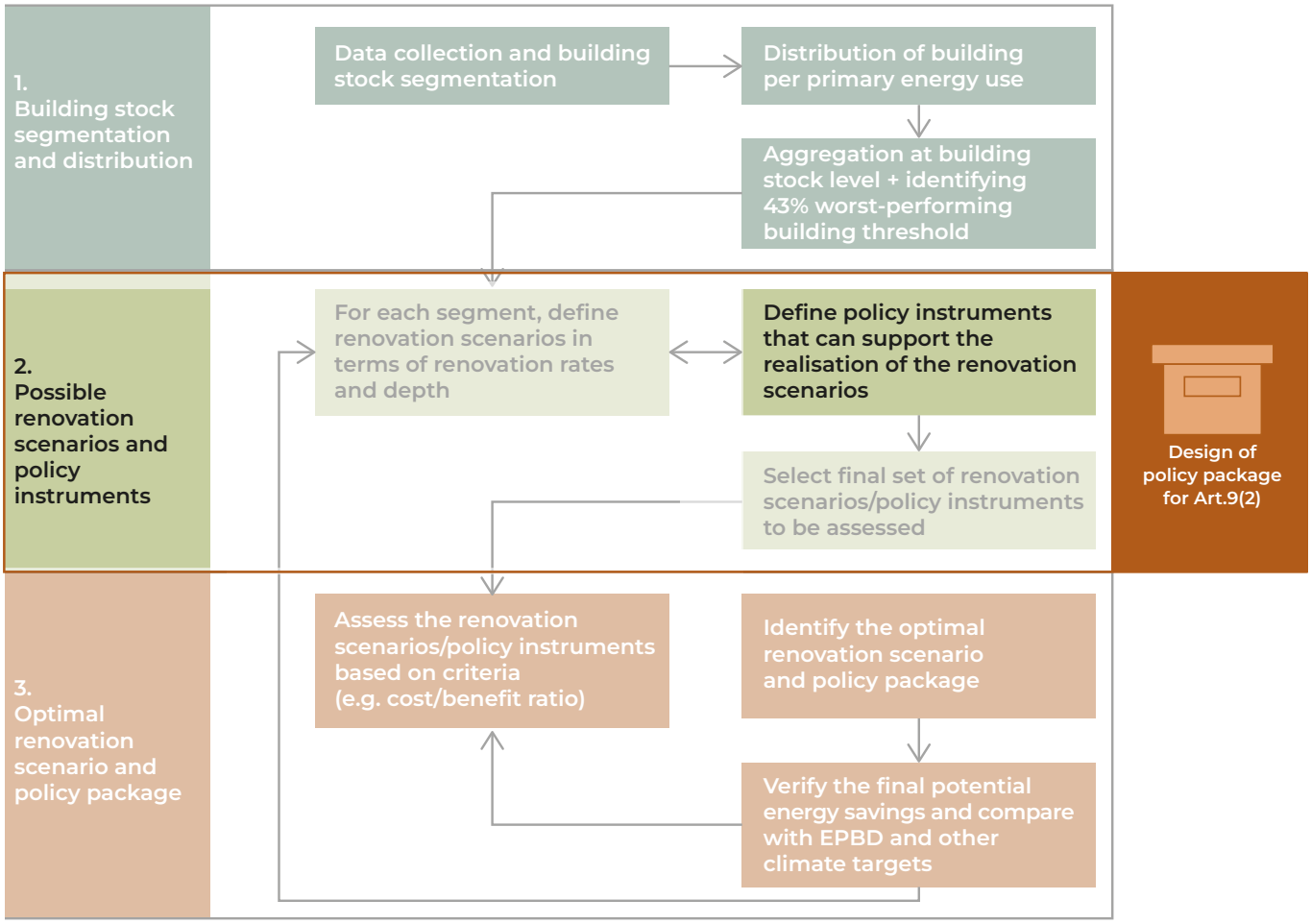

Figure 5. Scope of the report.

This chapter examines the key contextual aspects that Member States should analyse when designing their policy packages. The analysis focuses on three contextual aspects: the building stock, socio-economic elements and the existing national policy framework, as depicted in Figure 6. First, while data on building energy performance is crucial for step 1 and for setting the baseline and monitoring the implementation of Article 9 and other provisions (Article 22), the design of policy packages in step 2 requires additional information. This includes the distribution of residential buildings by type (single-family vs. multi-family buildings), urban vs. rural locations, and the energy mix supplying the building stock – all of which influence the type and structure of the policies to be implemented.

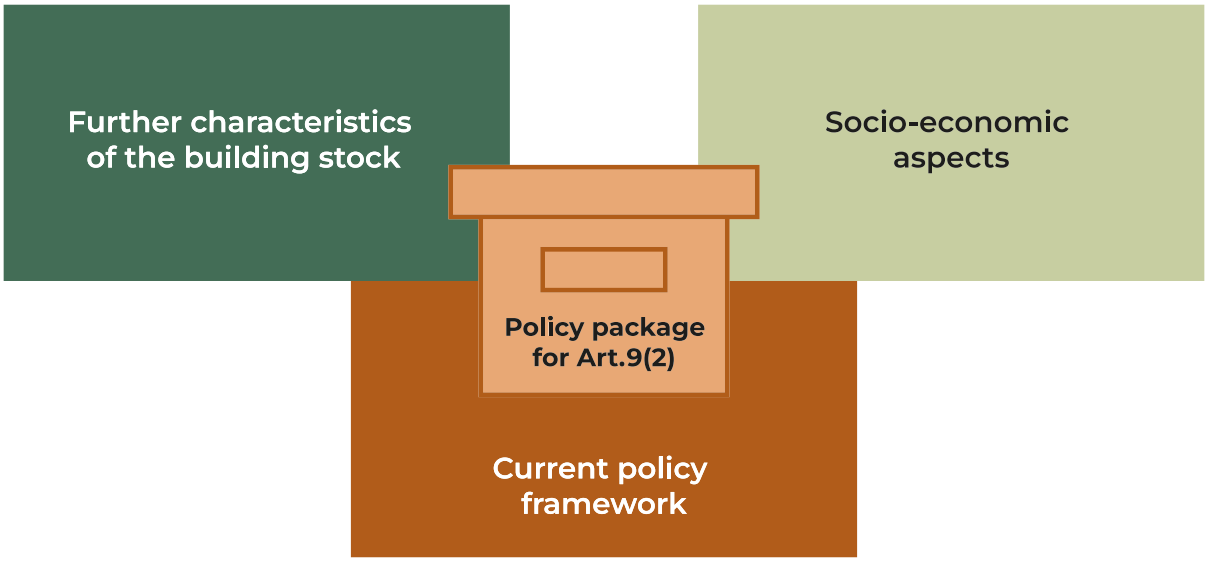

Figure 6. Contextual aspects to be analysed during the design of the policy package for the implementation of Art.9(2)

Second, Member States need to assess the socio-economic circumstances of building owners and tenants. This can influence the structure of the policy instruments and the feasibility of the renovation scenarios. Considerations such as the alignment between renovation ambition and owners' investment capacity, the distribution of ownership and the tenant/owner dilemma, as well as the needs of hard-to-reach population groups, should be reflected in the policy instruments.

Third, a clear understanding of existing policies and renovation mechanisms is essential to avoid overlaps, inconsistencies or conflicting measures. The current role and capacity of the diverse public institutions are also essential, since many of the provisions in Art.9(2) are linked to other requirements that may need strong participation from diverse entities – for example the requirements for one-stop shops under Article 18 of the EPBD, and the preparation of municipal heating and cooling plans under Article 25 of the EED.

The following sections analyse these three contextual aspects in greater detail.

2.1 Key building stock aspects

Buildings distribution

Features of the building stock influence the type of policy instrument that should/could deliver the progressive renovation of the residential building stock. For instance, the distribution of single-family and multi-family buildings –in terms of both number and floor area – can shape the prioritisation of a specific segment where greater energy improvements can be achieved. Member States should combine available data to get a reliable understanding of the distribution of their building stock.[10] In the EU, this distribution ranges from countries such as Ireland where around 90% of the population lives in houses, to Spain where more than 65% lives in flats.[11] **A policy instrument tackling single-family buildings may not be suitable for multi-family buildings, and vice versa**. A policy instrument around single-family buildings may represent a higher number of cases to be processed, while one for multi-family buildings with multiple owners will require additional strategies to create consensus to initiate the renovation.

The distribution of buildings between urban and rural regions can also influence the design of policy instruments. A Member State with a large portion of rural buildings may require specialised policy instruments to trigger and support the renovation of those buildings. The distribution of single-family and multi-family buildings can also vary between urban and rural regions. All these factors need to be considered together to ensure each segment has a suitable and effective framework to transition towards the zero-emission building stock by 2050.

The location and exposure to climate hazards also call for special elements to be included in the policy package addressing certain building segments. For instance, buildings in seismic regions often require integrated renovations that go beyond energy performance and tackle the building's structure as well. A policy instrument addressing buildings located in very hot climates requires special considerations to prevent overheating.

Worst-performing buildings

Dedicated efforts are needed to characterise the 43% worst-performing buildings since the majority of energy improvements (at least 55%) need to occur in this building segment. Any effective policy instrument designed to address this building segment needs to capture characteristics such as the period of construction and construction practices, and the number and type of renovations conducted until now (if any). Some of these buildings may for instance be close to the end of their lifespan and an energy renovation will have to be linked to a structural renovation to extend the lifespan of the building, where feasible.

[10] The EU Commission's guidance document to implement Article 9 EPBD further sets out explanations and recommendations about data use to characterise the national building stocks.
[11] Housing in Europe – 2023 edition

Understanding the overall status of the buildings to be targeted is also crucial since this may demand a policy instrument with a broader scope, going beyond energy performance. Especially in the worst-performing segment, buildings may lack basic services or have structural and other deficiencies. A policy instrument for the renovation of these buildings will need to promote comprehensive interventions that go beyond achieving energy savings.

Building energy mix

Another key aspect is the buildings' energy supply. Since the trajectory for the progressive renovation of the residential building stock is based on the average primary energy use, the source of buildings' energy supply has a direct effect on the indicator and the milestones established for the trajectory. For instance, EU Member States report primary energy factors ranging from 1.6 to 3.45 for electricity and from 0.6 to 1.6 for biomass.[12] At the same time, the energy mix in the final energy use of residential buildings is highly diverse. For instance, the main fuel in the final energy consumption in the residential sector in the Netherlands is gas (62%), while Ireland relies on oil and petroleum products (42%), and Portugal (39%) and Slovenia (40%) on renewables and biomass.[13]

Understanding the energy mix and supply of buildings is therefore key to design the policy instruments for Art.9(2). The decarbonisation of the energy supply of buildings can translate directly into improvements in the average primary energy use of the residential stock. Here, it is important to consider the 'energy efficiency first' principle: for instance, efforts to upgrade heating technologies should be preceded by energy efficiency measures that improve the energy performance of the building itself.

Other aspects

Local construction practices, climate zones and location can also demand policy instruments tailored to certain building segments. Buildings in regions with large renewable energy potential, high seismic activity, or particularly cold or warm climates can benefit from policy instruments that capture and leverage these specificities. Another example is the share of vacant properties. Non-occupied or non-inhabited properties need to be considered if MEPS are implemented for the residential sector, since special requirements for monitoring, support tools and exemptions are laid down by the EPBD (see Article 9(4,5,6,7)). The number and characteristics of vacant residential buildings can even be linked to measures to promote their renovation and attempt to reactivate long-term vacant residential buildings to contribute to delivering housing in regions with high demand.

[12] Support to primary energy factors review (PEF)
[13] Eurostat-Energy consumption in households

2.2 Key socio-economic aspects

Ownership and tenancy

Policy instruments to trigger the renovation of residential buildings should consider the distribution of the population and buildings according to ownership and tenancy. The EPBD requires Member States not to disproportionately exempt rental residential buildings or building units in their renovation efforts. Member States with a high share of owner-occupied dwellings require different policy instruments than countries with a high share of rented dwellings, since the motivations and triggering mechanisms behind the renovation are different. In the EU, the distribution varies from countries such as Romania with around 95% of the population living in owned homes, to Germany where more than 50% of the population lives in rented accommodation.[14]

The design of the policy instruments may also be influenced by the property market. For instance, for certain regions or building segments the market value of the properties may be too low, limiting the options to back up or justify the investment in a costly renovation and hindering access to loans or other financial mechanisms.

Vulnerable households

Designing policy instruments or renovation targets without considering the circumstances of vulnerable groups can lead to overestimating the ambition of the targets or effectiveness of the renovation policies. Especially for policy instruments targeting the worst-performing buildings – which are often occupied by vulnerable or energy-poor households and may require deep renovations – the upfront cost may limit renovation rates. Policy instruments will need to include strategies to ensure affordability, increase awareness, provide technical assistance, and monitor social impacts of the renovation strategies for these segments.

Understanding social aspects beyond the energy performance of the buildings occupied by vulnerable groups is crucial. Vulnerable populations may live in buildings that require not only energy performance renovations but also structural or basic services enhancements. Policy instruments in the context of Art.9(2) should capture these additional circumstances and aim for a more comprehensive renovation to improve living conditions.

Demographics

As discussed in section 2.1, the distribution of the population between urban and rural regions also plays a role in the design of policy instruments to implement Art.9(2). In the EU, this varies from countries such as Spain and the Netherlands with more than half of the population living in cities, to Ireland and Romania with more than 40% of the population living in rural regions.[15] The population in rural areas may face different circumstances such as lower disposable incomes, an ageing population that may be hesitant to invest due to financial limitations or personal perceptions, lack of workforce, and others.

[14] House or flat – owning or renting
[15] Urban-rural Europe - introduction

Policy instruments to trigger or support renovation in these regions require special features to tackle these barriers.

Capturing gender aspects is also crucial. For instance, households with children headed by a single adult have been hard hit by recent rising energy prices. Eurostat statistics from 2021 showed that 83% of single-parent households are led by women, and that single mothers and single women are more likely than other groups to struggle to pay their energy bills.[16] Understanding the composition of the households living in the targeted building segments is essential to for successful renovation scenarios.

2.3 Key current policy framework aspects

Governance structures

The design of policy instruments to deliver ambitious renovation targets is closely related to how the national, regional and local authorities are organised as well as the governance of the development and implementation of renovation strategies – since the former usually influences the latter. Certain policy instruments may require higher multi-level coordination among institutions. Moreover, the administrative, financial, strategic and operational capacity of local and national authorities will determine what kind of instrument is feasible or whether capacity building is required to make it feasible.

For instance, the level of digitalisation across institutions can affect how applications for renovation support are handled or results of a renovation strategy are monitored. The digital economy and society index – evaluating the provision and delivery of electronic government services – varies in the EU from around 90% in Estonia to around 20% in Romania.[17] This relevance increases when considering the expected update of the national EPC frameworks as per EPBD Articles19-20, the database for the energy performance of buildings as per EPBD Article 22, and the valuable data contained in renovation passports and digital building logbooks, for which there are also multiple provisions throughout the directive.

Existing renovation and support policies and strategies

Understanding the impact and results of existing policies and renovation strategies is crucial to design policy instruments that build on the successful features of the existing programmes – or that address their identified flaws. Here, it is important to determine the renovation rates and depth that existing mechanisms have achieved, and whether prolonging these mechanisms could deliver the targets of the national trajectory for the residential sector. This may require modifications to extend the coverage to other segments.

The review of existing mechanisms should be conducted with special attention to the worst-performing buildings. This will help determine whether existing policies can be leveraged to achieve the sub-target for this building segment or whether additional dedicated policies will be required.

[16] Gender aspects of energy poverty
[17] Digital Public Services in the Digital Economy and Society Index

Another element to review is existing support schemes, such as subsides on energy bills. While these programmes are vital for vulnerable groups, more systemic solutions should be pursued, creating approaches to direct these resources into renovation to enhance the living conditions of these groups. In Member States with large dependency in fossil fuels, these subsides often end up supporting the fossil fuel energy sector. By prolonging the dependency on these fuels and delaying the decarbonisation of the energy mix, this can hinder the required reduction in the average primary energy use of the residential building stock as per the EPBD recast.

Integration with other directives and provisions

Understanding how other existing obligations are being or going to be implemented will influence the design of the policy instruments for EPBD Art.9(2). Examples of obligations closely related to Art.9(2) include the development of heating and cooling plans as per EED Article 25, and the establishment of one-stop shops as per EPBD Article 18. The measures adopted as part of the implementation of the RED III and the EMD will also directly influence the building energy supply, the electrification of heating systems and residential energy bills. The carbon pricing implemented as part of ETS II will influence the energy expenditure of residential buildings users. All these measures can have repercussions on the cost-benefit assessment of residential building renovations, payback periods, and energy poverty status of households. The integration of the policy package for EPBD Art.9(2) with other provisions and directives is further discussed in chapter 4 Synthesis and exemplary cases.

Renovation industry

While designing policy instruments to deliver the renovation of the residential building stock, Member States should assess the capacity of their renovation industry in terms of the renovation rates and depth expected. Member States should evaluate whether dedicated efforts need to be deployed to enhance the productivity, integration and innovation of the sector, to attract and train workers, and to improve working conditions. Art.9(2) and other EPBD provisions can be used as a lever to trigger market stimulation, supply chain transformation, and innovation to strengthen the capacity of the renovation industry.[18]

[18] Upscaling Innovation in Renovation: A call for a strategic approach for a competitive and sustainable construction sector

2.4 National contexts for the implementation of EPBD Art.9(2)

Figure 7 summarises the key contextual aspects discussed in previous sections. Characterising the national context according to these aspects is crucial for Member States to design an effective policy package for the implementation of EPBD Art.9(2). This will enable Member States to define feasible renovation rates and depths for different building segments, considering not only their current energy performance but also all the contextual aspects that may influence the various targets and sub-targets of the renovation trajectory. This section discusses the building stock, socio-economic and policy context of three target countries of the JustReno project – Hungary, Poland, Romania – to illustrate the relevance of considering these elements during policy design.

Further building stock aspects	○ Distribution between urban and rural regions ○ Distribution between typologies (e.g. share of single-family buildings and multi-family buildings) ○ Characterisation of the 43% worst-performing buildings ○ Building energy supply mix ○ Vacancy ○ Climate, natural hazards, etc. ○ Construction practices
Socio-economic aspects	○ Ownership structures ○ Distribution between owner-occupied and rental dwellings ○ Diagnosis of residential buildings market ○ Definition of vulnerable households ○ Energy poverty indicators ○ Additional housing requirements (e.g. seismic renovation, overcrowding alleviation, basic services availability) ○ Characterisation of urban and rural regions ○ Gender equality and household composition
Existing policy framework aspects	○ Governance structure (e.g. roles and responsibilities, decision-making, budget allocation) ○ Authorities' capacities (e.g. level of digitalisation) ○ Existing policies' impacts and results ○ Implementation of related provisions (e.g. EED Art. 25, (...) Art. 18) ○ Diagnosis of renovation industry

Figure 7. Checklist of key considerations for the design of effective policy packages to implement Art.9(2)

Hungary profile

Figure 8 summarises the characteristics of the Hungarian context in relation to Art.9(2).[19] **The Hungarian building stock is dominated by single-family houses, which represent more than 70% of the occupied floor area**. Estimations based on energy performance certificates[20] show that around 40% of households fall in the three worst-performing classes. Around 61% of single-family buildings fall into these categories. **This highlights the importance of a dedicated policy instrument to address this building segment as part of the EPBD targets**. Another aspect that requires attention is the decarbonisation of heating systems. The residential building stock in Hungary consumes on average around 155 kWh/m^2 for space heating,[21] the fourth highest in the EU. This becomes even more critical when considering that natural gas represents 46.4% of the final energy consumption in the residential sector,[22] and around 20% of households rely on solid fuels (in particular wood, but also coal) for heating.[23]

In terms of the socio-economic context, around 92% of residential buildings in Hungary are occupied by the owners, the third highest rate in the EU.[24] This could enable a more homogeneous implementation since a large portion of the policy package would be oriented to this segment, without the barriers of split incentives and rental regulations. Other considerations relevant to owned-occupied dwellings are discussed below. Even though there is a high ownership rate in Hungary, the EPBD requires that "*Member States shall not disproportionately exempt rental residential buildings or building units.*" A dedicated policy instrument to tackle this small segment can ensure a higher level of effectiveness. Here, it is crucial to understand the distribution of the rental market; for instance, in Budapest the rental rate is almost double the national average.

Due to the high rate of ownership, the policy instruments to trigger the renovation of buildings should include strategies to mobilise building owners. Owners will benefit directly from enhancements in building performance and operation, including energy savings, better living conditions, better indoor conditions, air quality indoors and outdoors, and health benefits. The design of the policy instruments should consider the large disparities across the residential segments and in the investment capacities of building owners. Certain residential property prices have increased more than 200% between 2010 and 2024,[25] while around 1.2 million single-family houses have an estimated value below €25,000, which may limit access to loans or security for investment in renovations.[26] Moreover, around 25% of households, representing roughly 30% of the population, are affected by at least one form of housing poverty.[27] While the National Energy and Climate Plan defines energy-poor households as vulnerable consumers unable to pay energy bills, the 2015 Energy Efficiency Law and the 2021 Energy Efficiency Obligation Scheme (EEOS) use a 25% income threshold for heating and hot water costs. Having a unified definition is essential to ensure that all the EPBD provisions addressing vulnerable households are properly implemented.[28]

[19] For a broader characterisation of the Hungarian context in terms of building stock data, governance and vulnerable households, see the project baseline assessment report for Hungary.
[20] The estimations are based on the previous EPC scheme in Hungary (in place until October 2023); more details can be found in A magyarországi lakóingatlan-állomány energia-igényének becslése [Estimating the energy demand of the housing stock in Hungary].
[21] Sectoral Profile - Households
[22] Energy consumption in households
[23] https://www.mdpi.com/2071-1050/13/23/13047
[24] House or flat – owning or renting
[25] Eurostat: Housing Price Statistics
[26] See the "What Do We Live On?" wealth survey of the Hungarian Central Statistical Office (HCSO)
[27] Habitat for Humanity Hungary annual report on energy poverty 2023, 2024
[28] See section 1.2 The overlap between EPBD Art.9(2), vulnerable households and worst-performing buildings

The current policy framework in Hungary includes the existing targets of the long-term renovation strategy (LTRS) to renovate 100,000-130,000 homes per year until 2050 and to reduce energy consumption in the residential building stock by 20%. The recent update of the EEOS is expected to trigger the energy renovation of 150,000 homes by 2027. Renovation scenarios for the Art.9(2) trajectory[29] should examine how these targets align with the first two EPBD milestones for 2030 (-16% average primary energy use) and 2035 (-20-22%). In particular, analysis should focus on how the 43% worst-performing buildings are being addressed – since at least 55% of the energy savings need to be achieved through the renovation of this segment – and what adjustments on the targets are required. The later milestones for 2040, 2045 and 2050 should also align with the targets for the whole building stock included in the LTRS, i.e. to cut carbon emissions from building operations by 60% compared to 2018–2020 levels by 2040, and to ensure that 90% of buildings meet nearly zero energy standards by 2050.

Policy instruments can be developed on top of mechanisms such as the Home Renovation Program, targeting about 20,000 single-family homes, which requires 30% primary energy savings and verifications by energy certificates before and after renovation. **Hungary should prioritise the monitoring of its renovation efforts, especially considering that the renovation monitoring system proposed in the LTRS has not been implemented yet.** In terms of governance, the Hungarian national authorities should leverage the potential of municipalities – for example, in creating heating and cooling plans (as per the EED provisions) to meet the urgent need to decarbonise heating systems. **Around 300 municipalities have already created sustainable energy and climate action plans (SECAPs)**: this represents a significant opportunity to highlight the role of the buildings sector within these plans and align them with EPBD provisions, targets and policy instruments.

[29] See Figure 4 in chapter 2 Key contextual aspects for the implementation of EPBD Art.9(2)

Further building stock aspects	○ 73% of buildings located in urban areas, 27% in rural regions ○ 73% of occupied floor area corresponds to single-family houses (62% of number of dwellings), 27% to multi-family buildings (38% of number of dwellings) ○ Around 40% of households fall in the three worst performing categories of the EPC scheme. Around 61% of single-family houses fall into these categories ○ Natural gas represents 46% of energy fuels in the residential stock ○ Around 20% of households rely on solid fuels such as wood and coal ○ Households consume around 13 koe/m² (155 kWh/m²) for space heating, the fourth highest in the EU ○ Vacancy rate around 11%
Socio-economic aspects	○ 92% ownership rate, the third highest rate in the EU ○ Certain regions such as Budapest have high rental rates ○ Between 2010 and 2024, average residential property prices surged by 234% ○ 1.2 million single-family homes valued below €25,000 ○ Around 25% of households, representing roughly 30% of the population, are affected by at least one form of housing poverty ○ No unified definition of vulnerable households
Existing policy framework aspects	○ Municipalities do not have access to cadastre or other building-related data ○ No unified, comprehensive and up-to-date data system covering the full building stock ○ The Home Renovation Program, targeting about 20,000 single-family homes, requires 30% primary energy savings, verified by energy certificates before and after renovation ○ Energy Efficiency Obligation Scheme (EEOS) obligations are expected to trigger the energy renovation of 150,000 homes by 2027 ○ Existing LTRS targets ○ More than 300 municipalities have joined SECAP initiative to help local authorities plan and implement climate mitigation and adaptation strategies by 2030 ○ A planned building renovation monitoring system as part of the LTRS has not been implemented yet ○ More than 90% of registered construction enterprises have <5 employees; labour (skills) shortages are one of the most pressing challenges for the construction sector in general ○ Energy price cap for residential costumers since 2012, and adjusted in 2022

Figure 8. Hungary's key contextual aspects for the implementation of EPBD Art.9(2)

Poland profile

Figure 9 summarises the characteristics of the Polish context in relation to Art.9(2).[30] In Poland, single-family houses make up 59% of the total floor area of the residential building stock and multi-family buildings 41%. The distribution between urban and rural areas is similar, with 58% of the residential floor area located in urban areas and 42% in rural regions. The date of construction varies between regions. For instance, the oldest buildings, built before 1918, are most numerous in the voivodeships of Lower Silesia, Lubusz and Opole, while the most buildings built between 1918 and 1944 are in Lower Silesia and Silesia. Nationally, almost 30% of buildings were built between 1945 and 1978, with the largest number of buildings from this period being in the provinces of Mazovia and Silesia, and the fewest in Lubusz. The number of EPCs issued also varies between regions, with **the majority of EPCs issued for buildings in the west of the country, where higher market transaction activity has been observed**.[31] Understanding the reasons behind this kind of developments is crucial to leverage these trends within the renovation policies.

Households in Poland consume around 13.1 koe/m^2 (152 kWh/m^2) for space heating, the fifth highest in the EU.[32] In terms of energy supply, gas and solid fuels together account for more than 40% of the final energy use in the residential building stock. **District heating plays a significant role in Poland, covering 52% of households and nearly 70% of city dwellers**. Decarbonisation efforts in this segment represent a large opportunity to address a vast number of residential buildings.

Poland has a high rate of home ownership, with 87% of the population living in owner-occupied buildings, the sixth highest rate in the EU.[33] There is no official definition of vulnerable households, but existing renovation programmes have included income thresholds and classifications to define the type and level of support that applicants can receive. Additionally, there is an official definition of energy poverty in Poland, combining inability to fulfil different energy needs with low-income, high-energy expenditure, and low building energy efficiency. For around 19% of the population the energy expenditure share in income is more than twice the population median.[34]

The policy framework includes two existing renovation programmes, the Clean Air and the Stop Smog programmes. The former aims at improving air quality and energy efficiency in buildings by replacing inefficient heat sources and retrofitting homes. The programme provide subsides based on three levels of income, providing funding to cover up to 40%, 70% or 100% of the renovation cost. The second programme addresses mainly those affected by energy poverty and is implemented by municipalities where anti-smog resolutions are in force. Subsidies are granted for the elimination or replacement of heat supply with low-emission technologies and for thermal modernisation in single-family residential buildings. Applicants can receive up to 70% of the investment costs. In certain cases, residents can receive a non-repayable grant covering up to 100% of the project costs. Applications are limited to households that fulfil certain income criteria.

[30] For a broader characterisation of the Polish context in terms of building stock data, governance, and vulnerable households, see the project baseline assessment report for Poland.
[31] Housing stock through the prism of energy performance certificates (Zasób mieszkaniowy przez pryzmat świadectw energetycznych)
[32] Sectoral Profile - Households
[33] House or flat – owning or renting
[34] Energy consumption in households in 2021 (Zużycie energii w gospodarstwach domowych w 2021 r.)

Poland plans to amend its EPC framework in 2026. Currently, EPC indicators only consider the non-renewable part of primary energy. However, the EPBD provisions for the residential sector and the energy performance of buildings in general are based on primary energy, including renewable and non-renewable sources. as defined in Article 2. **Considering only the non-renewable part of primary energy may lead to incorrect assessments, monitoring and misalignment with the EPBD requirements.**

Further building stock aspects	○ 58% of residential buildings floor area located in urban areas, 42% in rural regions ○ 59% of floor area corresponds to single-family houses (41% of number of dwellings), while 41% of floor area belongs to multi-family buildings (59% of number of dwellings) ○ Natural gas and solid fossil fuels represent 21% and 20% of energy fuels in the residential stock ○ District heating covers 52% of households and is used by nearly 70% of city dwellers ○ The Clean Air Program defines worst-performing buildings as ones where the annual useful energy demand for heating is higher than 140 kWh/(m² year) ○ Households consume around 13.1 koe/m² (152 kWh/m²) for space heating, the fifth highest in the EU
Socio-economic aspects	○ 87% of people live in owner-occupied dwellings, the sixth highest rate in the EU ○ Around 56% of pensioners live in multi-family buildings, while most farmers (95%) live in detached single-family houses ○ No unified definition of vulnerable households, but renovation programmes in place make distinctions for the eligible subsidies based on household income ○ Energy poverty is defined as a situation where a household is unable to provide itself with sufficient heating, cooling, lighting and energy to power appliances due to a combination of low-income, high-energy expenditure, and low energy efficiency of the building
Existing policy framework aspects	○ Poland has not yet fully implemented the provisions prohibiting financial support for fossil fuel boilers (1 January 2025 was the deadline) ○ At the national level, Statistics Poland prepares annual reports with aggregated data on the building stock based on construction activity and censuses, and administrative registers ○ At the local level, land and building registers are updated using surveying work, building permits, administrative decisions and field inventories ○ Clean Air Programme aims to improve air quality and energy efficiency in buildings by replacing inefficient heat sources and retrofitting homes ○ Stop Smog Programme, mainly targeting those affected by energy poverty, is implemented by municipalities where anti-smog resolutions are in force ○ An amendment of the EPC framework is planned for 2026

Figure 9. Poland's key contextual aspects for the implementation of EPBD Art.9(2)

Romania profile

Figure 10 summarises the characteristics of the Romanian context in relation to Art.9(2).[35] In Romania, dwellings are fairly evenly distributed between urban and rural areas, with 55% in urban regions and 45% in rural areas. In urban areas, 72% of living spaces are located in multi-family buildings – apartment blocks with an average of 40 apartments per block. In rural areas, by contrast, 95% of living spaces are single-family houses. In total, 87% of buildings were constructed before 1990. This is critical considering that the main technical building regulation in the country (the "Calculation of the Energy Demand for Heating Buildings") was introduced in 2000. As a result, 2000 is taken as a reference year, since buildings constructed before this year are very likely to be energy inefficient and in need of renovation. **Single-family dwellings in both rural and urban areas represent around 65% of the buildings in need of renovation.**

Households in Romania consume around 13.9 koe/m^2 (162 kWh/m^2) for space heating, the third highest in the EU.[36] In July 2025, the government lifted the cap on energy prices, in place for three years – making energy efficiency and decarbonisation of building energy supply even more pertinent. Since natural gas represents the second largest share of final fuels in residential buildings in Romania, around 35%,[37] **many building users may be suddenly exposed to higher energy bills, risking a significant increase in people going into energy or general poverty.**

Romania has the highest ownership rate in the EU: around 95% of the population lives in owner-occupied homes.[38] Other important socio-economic aspects to consider are floor area and housing quality. In 2023, 40% of people in Romania lived in overcrowded households, the second highest in the EU and more than double than the EU average (16%).[39] The country has an average of 1.1 rooms per person, one of the lowest rates in the EU.[40] In addition, 21.1% of Romania's population does not have a toilet, shower or bathtub compared to the EU average of 1.5%. **This highlights the need for comprehensive renovation interventions that address not only the energy performance of buildings but housing quality and indoor conditions in general.**

There is an official definition of vulnerable consumers in Romania, linking health conditions, disability, age, insufficient income or isolation from energy sources to the risk of social marginalisation.[41] More recently, energy poverty was linked to the vulnerable consumer concept in the Romanian Law no. 226/2021, where it is described as the *"inability of the vulnerable consumer (...) to cover the minimum energy needs (...)."*

The same law established social protection measures for vulnerable energy consumers, with clear objectives including to ensure the affordability of energy prices for all citizens; ensure the uninterrupted physical availability of energy resources for all vulnerable consumers; promote access to measures aimed at improving the energy performance of residential buildings; and prevent and combat energy poverty and social exclusion.

[35] For a broader characterisation of the Romania context in terms of building stock data, governance and vulnerable households, see the project baseline assessment report for Romania.
[36] Sectoral Profile - Households
[37] Energy consumption in households
[38] House or flat – owning or renting
[39] Living conditions in Europe - housing
[40] Size of housing
[41] Art. 3, point 23 of the Romanian Law no. 123/2012

The financial social protection measures in the law consist of providing support to ensure minimum energy needs, including heating assistance for the home; energy consumption assistance aimed at covering part of the household's energy consumption throughout the year; assistance for the purchase of energy-efficient equipment within a dwelling, necessary for lighting, cooling, heating and providing domestic hot water, for replacing technically outdated household appliances with energy-efficient ones, as well as for using communication tools that require energy consumption; and assistance for the purchase of products and services to improve the energy performance of buildings or to connect to energy sources.

Many of these principles are aligned with EPBD provisions, and Romanian authorities should leverage them for the implementation of the EPBD. Existing renovation efforts in Romania include the Energy Efficient Home programme, launched by the Environmental Fund Administration, under which 1,235 residential buildings have been approved for energy efficiency measures; the National Multiannual Programme on Increasing the Energy Performance of Residential Blocks, coordinated by the Ministry of Development, Public Works and Administration, dedicated to homeowners' associations in apartment buildings; and portions of the National Recovery and Resilience Plan dedicated to energy efficiency improvements combined with the installation of solar panels in approximately 14,850 single-family residential buildings belonging to energy-vulnerable households.

These existing programmes represent a base to build on. The implementation of Art.9(2) should be seen as an opportunity to assess the performance of those programmes and adjust them as necessary to reflect the EPBD provisions and targets. The coordination among the different actors responsible for the programmes is crucial. Moreover, **around 30 municipalities in Romania are developing SECAPs as part of the Covenant of Mayors' initiative**. These plans include provisions regarding the state of buildings, measures to improve their energy efficiency, and potential sources of funding for investments aimed at their decarbonisation. **Lessons learned should be leveraged to attract other Romanian municipalities and strengthen their role in efforts to implement Art.9(2).**

Further building stock aspects	○ 45% dwellings located in rural areas, and 55% in urban regions ○ 63% of Romanians' dwellings have less than 50m² floor area ○ In rural areas, 95% of living spaces are single dwellings ○ In urban areas, 72% of living spaces are in multi-family buildings - apartment blocks with an average of 40 apartments/block ○ 87% of buildings were constructed before 1990, the main technical building regulation was introduced in 2000 ○ Single-family dwellings in both rural and urban areas represent around 65% of the buildings in need of renovation ○ Largest share of total energy consumption comes from on-site energy generation using wood or biomass heating sources ○ Second largest share of energy consumption comes from natural gas for heating ○ Households consume around 13.9 koe/m² (162 kWh/m²) for space heating, the third highest in the EU
Socio-economic aspects	○ 95% of people live in owner-occupied dwellings, the highest rate in the EU ○ Definition of vulnerable households in place from 2012 ○ Definition for energy poverty ○ Around 21% of Romania's population does not have a toilet, shower or bathtub, compared to the EU average of 1.5% ○ In July 2025 the government lifted the cap on energy prices, after three years in place
Existing policy framework aspects	○ National building register with information on the energy performance of buildings based on data extracted from EPCs is being developed ○ Around 30 municipalities have joined the SECAP initiative to help local authorities plan and implement climate mitigation and adaptation strategies by 2030 ○ Multiple national and regional programmes targeting energy efficiency in residential blocks, energy efficiency and solar energy for single-family buildings of vulnerable households ○ Existing programs include multiple governmental organisations such as Environmental Fund Administration and the Ministry of Development, Public Works and Administration

Figure 10. Romania's key contextual aspects for the implementation of EPBD Art.9(2)

Similarities and opportunities

Figure 11 shows the contextual similarities identified from the three countries analysed above. These similarities represent opportunities for cooperation and transfer of lessons learned. In half of the cases similarities are observed across the three countries. For instance, all three have a very high rate of home ownership, high dependency on natural gas and/or solid fossil fuels, and municipalities actively engaged in the development of SECAPs. This could be leveraged to create bilateral cooperation to understand strategies to address common issues. For instance, Poland and Romania have a similar distribution of the residential building stock between urban and rural areas: sharing insights from successful strategies from experiences in rural regions can create a better point of departure for the design of policies for this segment. Poland and Hungary could exchange on how to address single-family buildings. Hungary and Romania could study the lessons learned from the Poland national building monitoring system.

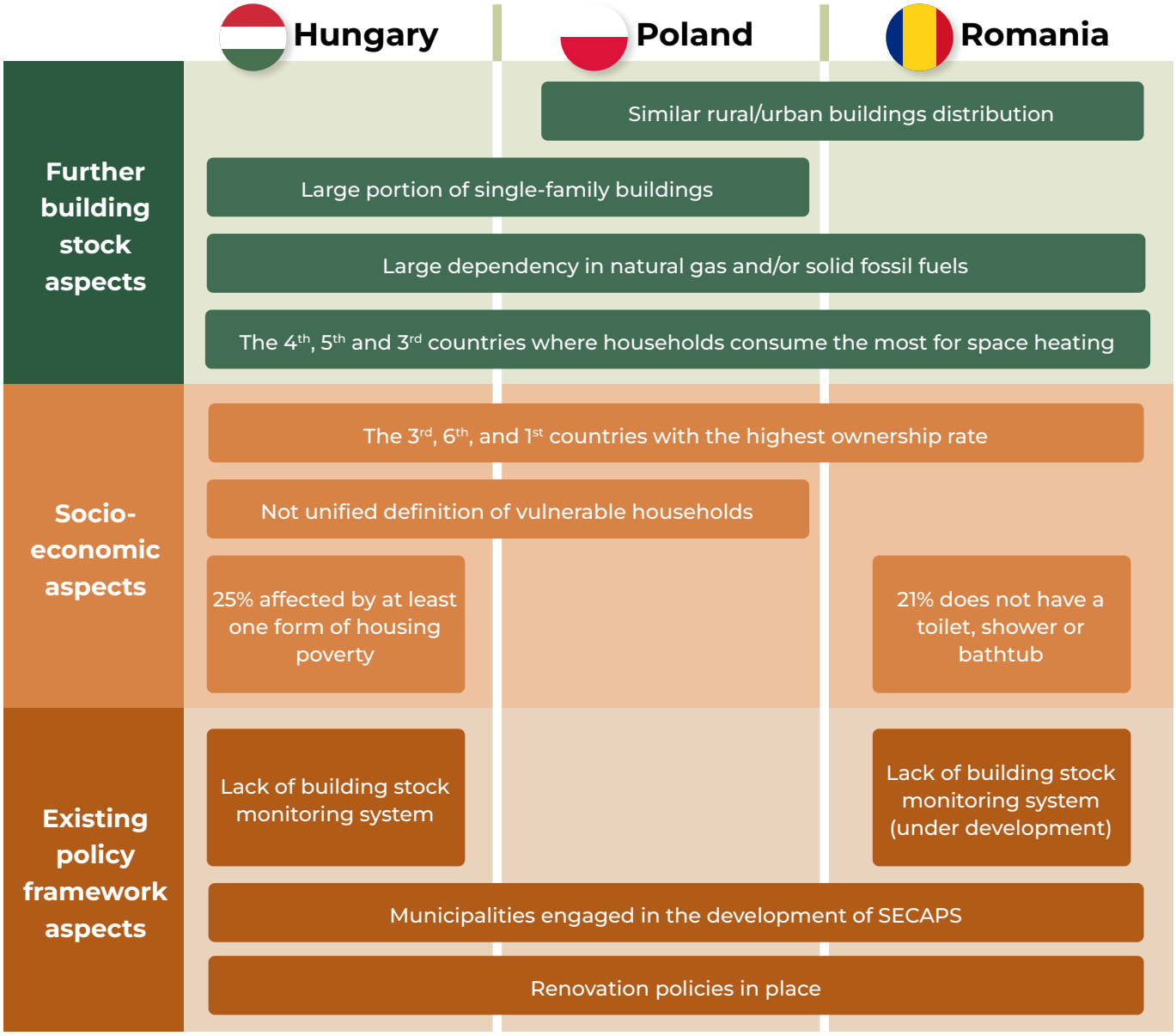

Figure 11. Contextual similarities between the JustReno target countries for the implementation of Art.9(2)

3 JustReno

Designing the policy package for the implementation of EPBD Art.9(2)

Once Member States have acquired a better understanding of the key contextual aspects, they need to design policy instruments that align with their circumstances and can support the delivery of the renovation scenarios (segments, rates, depths) developed in their analysis (see Figure 4 in Chapter 2).

Policymaking is often portrayed as a linear sequence: identifying a problem, implementing a solution, and concluding with an ex-post evaluation. In practice, policymakers frequently resort to "pre-coded" solutions that promise quick or convenient fixes, leaving little space for innovation. Studies show that many policy processes remain disconnected from the realities on the ground and lack the flexibility to adapt once in motion.[42] The design of policy instruments should start by defining clearly the problem and objectives the instrument is trying to address; it should be based on solid groundwork, including skill mapping and research on existing policies addressing similar issues, and involve multiple actors (e.g. the groups that would benefit from the policy, citizens etc.).

The implementation of Art.9(2) and other EPBD provisions should be seen as an opportunity to develop innovative policy instruments. Various elements of a policy can be regarded as innovative, including the goal of the policy, how it is governed, and its financial framework. This chapter discusses key themes that should be addressed by the final policy package for Art.9(2), including addressing the worst-performing buildings, vulnerable groups, pursuing replicability, effective governance, affordability of renovations and mobilisation of investments, as depicted in Figure 11.[43]

[42] Policy innovation for building renovation

[43] Please note that the policy package should not be limited to the key elements discussed here. The purpose of this chapter is to focus on crucial elements in the scope of the report; however, other topics also need to be addressed, such as the decarbonisation of the building energy supply, renovation beyond the 43% worst-performing buildings, and life-cycle aspects.

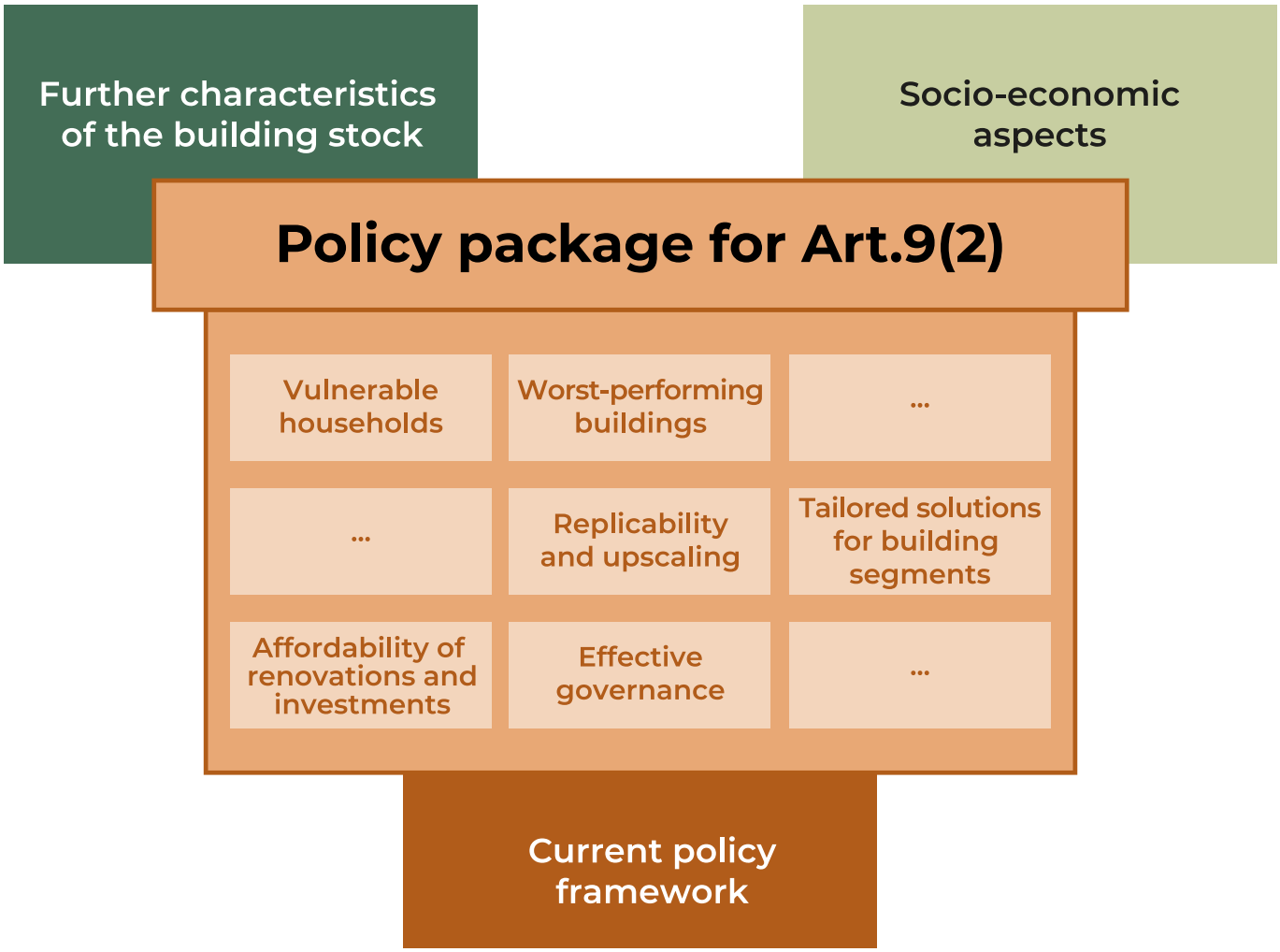

Figure 12. Key themes to be addressed in the final policy package for the implementation of Art.9(2)

These themes should be tackled either by dedicated stand-alone policy instruments or by instruments embedded in broader policy packages. Since there is no one-size-fits-all solution applicable to all Member States, this chapter discusses instruments that can tackle particular challenges in the context of Art.9(2). The policy instruments discussed are based on existing practices[44] but also on new or updated perspectives on renovation policies. The policy instruments should be seen as a starting point concept that needs to be adapted and further developed to fit the circumstances and context of each Member State.

[44] While some existing practices are presented in dedicated boxes through the sections, most of these existing examples require upgrades to fully capture the particularities of worst-performing buildings, their connection to vulnerable groups, Art.9(2) targets and other EPBD provisions.

3.1 Addressing worst-performing residential buildings

The 43% worst-performing segment

While Member States can establish their own national definition of worst-performing buildings, the EPBD requires that at least 55% of improvements to reduce average primary energy use in residential buildings are achieved among the 43% worst-performing buildings. Renovation scenarios and policy packages should therefore have a clear estimation of the renovation rates, depth and total energy savings that will be achieved in this building segment.

This calls for dedicated policy instruments to target the 43% worst-performing buildings. Identifying the 43% worst-performing buildings and engaging their owners and tenants is essential. Multiple studies and analyses across the EU have shown that there is a close relationship between the age or date of construction of a building and its energy performance. To identify the worst-performing buildings and engage with their building owners and tenants to trigger renovations, **a dedicated registration platform could be developed**. National and local authorities can invite residents and owners of buildings dated from certain periods (e.g. before 1970)[45] and that have not undergone renovations (e.g. in the last 15 years) to register their buildings on the platform. In return, they can be offered for instance an initial consultation from a one-stop shop. Since Member States will have to establish a comprehensive database on the energy performance of buildings in accordance with EPBD Article 22, it is important to align any data collection efforts and properly integrate relevant data in the national database. Furthermore, any local registration platform should be established in view of EPBD Article 22, which asks national governments to provide relevant data to the local level to assist with local heating and cooling plans. **Dedicated awareness and communication campaigns need to be deployed to ensure that vulnerable households and people living in rural areas get access to the information and registration platform**.

In **Hungary**, this building owners registration platform could be embedded in the building renovation monitoring system that is still to be created as part of the LTRS. Another option could be to extend the national buildings registry (only for buildings that request permissions) to capture the information on worst-performing buildings as well.

In **Poland**, it could be linked to the land and building registers that are in place at local level.

In **Romania**, this registration platform could be linked to the national building register that is being developed.

[45] Depending for instance on when the first energy standard was applied in the country – e.g. in Romania, authorities consider 2000 as a reference year to characterise the energy performance of buildings.

This can link to the provision in EPBD Article 19(13) about ensuring that where a building is issued an EPC below level C, building owners are invited to a one-stop shop to receive renovation advice. Even though building owners and residents that choose to register their buildings may not have received an EPC, the building is likely to have poor energy performance since the construction period and lack of renovation were defined as the criteria for registration. An initial consultation could provide support to the building owner to issue an EPC or renovation passport or apply for technical or financial support for renovation depending on the conditions of the building and circumstances of the owner and/or tenants. This can also be operationalised through the roll-out of one-stop shops as per EPBD Article 18. Engagement with this segment is crucial, because of the high potential for energy savings and GHG emissions reductions within the 43% worst-performing buildings. Establishing **a clear roadmap for those buildings based on deep or staged renovations represents a major opportunity to realise the targets of Art.9(2). The uptake of EPCs and renovation passports (both including renovation recommendations) is crucial.**

Minimum energy performance standards

A MEPS scheme is one option to trigger the renovation of buildings above the 43% threshold (see Box 1). However, the diversity of buildings and complexity of the contexts in this building segment requires a higher level of granularity and specialisation. For instance, commercial private owners of residential portfolios and single building owners do not have the same economic capacity to carry out a mandatory renovation. An alternative would be to **start by establishing renovation obligations for multi-family buildings owned entirely by commercial owners**. This can be linked to the requirements to establish targets and report environmental metrics such as energy consumption and GHG emissions for real-estate portfolios as per the Corporate Sustainability Reporting Directive and European Sustainability Reporting Standards. Penalties such as imposing restrictions on rent increases or prohibitions to sell can also be part of the policy instrument.

This kind of piloting strategy with large private owners may not be relevant for markets such as Romania, Hungary and Poland, where around 90% of residential buildings are owner-occupied.

Any policy instrument addressing worst-performing buildings should be designed and rolled out with the energy efficiency first principle as its backbone. The efficiency of buildings should be enhanced before replacing heating systems to ensure a more structural decarbonisation of the building stock, to avoid cases where high investments are required in over-dimensioned heating systems supplying inefficient buildings. Making worst-performing buildings more efficient is key to enable the deployment of more renewable heating options such as heat pumps, since decreasing the heating requirements of a building – by making it more efficient – can make these kinds of technologies more compatible with the building requirements.

When identifying the worst-performing buildings, it is important to use reliable and representative data and not only rely on EPC data. The baseline assessment reports for the three countries are a good starting point for selecting appropriate data.

Tackling the 43% worst-performing buildings is closely linked to addressing vulnerable households and financial mechanisms, as discussed in the sections Addressing worst-performing buildings and Affordability and access to renovations and mobilisation of investments below.

Box 1 Examples of existing practices addressing the renovation of worst-performing buildings

The **Federal Funding for Efficient Buildings in Germany** offers financial support for energy-efficient construction and renovation projects. **For buildings classified within the worst-performing 25% of the German building stock in terms of energy performance, a bonus of 10 percentage points is awarded** if the building achieves an Efficiency House Standard rating of 40, 55 or 70. The worst-performing buildings in Germany can either be identified with a valid EPC with a rating of class H or a final energy of >/= 250 kWh/m²/year, or based on the building's construction year in conjunction with data on the energy performance of the building envelope/past renovations .

In **Flanders, Belgium**, new owners of **residential buildings** with an energy label E or F **are obliged to carry out an energy renovation within five years of purchase** (and other transfers, e.g. inheritance) or after the establishment of a leasehold in order **to achieve at least an EPC label D**.[46]

France has established a MEPS scheme for the residential sector that goes back to the law on the energy transition for green growth (2015) (Loi relative à la transition énergétique pour la croissance verte), which contains a long-term target for the building stock by 2050. In its original version, the law stipulates that all private **residential buildings in classes F and G must be renovated**. As a first step, rent increases for very inefficient buildings (EPC classes F and G) were not allowed as of August 2022. As part of the Energy and Climate Act of 2019 (Loi relative à l'énergie et au climat), it was stipulated that apartments with an annual final energy consumption exceeding 450 kWh/m²/year may no longer be rented out from 1 January 2023.

In **Hungary**, the **Energy Efficiency Obligation Scheme is a major policy instrument that obliges energy providers to achieve annual savings among final consumers**. Initially effective in the industrial, transport and logistics sectors, the scheme gained popularity in the residential sector in 2024. Favourable energy savings calculation and accounting rules under the scheme enabled free attic insulation, primarily in single-family homes in rural areas. In 2025, obligations were raised, which are expected to trigger the energy renovation of 150,000 homes by 2027. The EEOS is Hungary's most successful market-based energy savings mechanism to date and will be operational until at least 2035.

[46] Renovation obligation for residential buildings

3.2 Prioritising vulnerable households

Definition and characterisation of different groups

As discussed in chapter 1, the recast of the EPBD includes multiple provisions to address vulnerable households. **A clear definition of vulnerable households in the national context is a prerequisite before designing policy instruments to address this group. The definition should be comprehensive, clear and streamlined across the different legislation to ensure coherence.** The relation to other concepts such as energy poverty indicators also needs to be explicit and clear, especially considering the need to monitor energy poverty indicators as part of NBRPs. **Vulnerability and energy poverty in rural contexts may be defined differently**, or at least recognised as stemming from different causes than in urban settings.

Poland and Hungary do not have a streamlined definition of vulnerable households, and developing one should be **a priority in these countries**.

The definition of vulnerable households serves as a framework and starting point for the design of policy instruments. Nevertheless, the operationalisation of policy instruments for technical or financial support for renovation for vulnerable households requires a further characterisation of these groups. Vulnerable groups encounter diverse circumstances that go beyond their annual income. Vulnerability may be related to employment conditions (e.g. temporary, seasonal), ethnicity, refugee status, educational level, age, gender or disability, all of which create different needs for engaging in a renovation support scheme. **Tailored strategies are needed for different vulnerable segments to ensure adequate targeting and engagement of these households** and increase the chances of realising the intended renovations. For all cases, it is necessary to tackle non-financial barriers to access support schemes (e.g. technicality of forms, language, jargon and complexity of campaigns, etc.). For details on financial elements, see section Affordability and access to renovations and mobilisation of investments below.

Another prerequisite for the design of policy instruments to support vulnerable households in the context of the renovation efforts is **mapping the overlap between vulnerable households and worst-performing buildings**. This is fundamental in the context of the EPBD recast, considering that the directive includes explicit provisions addressing these two aspects, and that very often vulnerable groups live in worst-performing buildings. **This demands that policy instruments to address the 43% worst-performing buildings and to support vulnerable households go hand in hand**. Synergies and overlaps need to be clearly understood. It is very likely that a significant portion of the 43% worst-performing buildings is occupied by vulnerable groups. At the same time, some vulnerable households live in other segments of the residential buildings stock – these households should not be left behind.

The role of publicly provided (social) housing

Although publicly provided social housing does not represent a large share of dwellings in the three countries, it still a relevant segment for vulnerable households and could be used to exemplify good practices for other categories of worst-performing buildings. **A dedicated policy instrument targeting publicly provided (social) housing can contribute to the EPBD provisions on vulnerable households and worst-performing buildings, and the EED requirements.**

Furthermore, publicly provided (social) housing lies at the intersection of EPBD provisions and EED requirements on energy savings obligations and renovation rates for buildings owned by public bodies. **National authorities should align efforts in these two work lanes to avoid contradictions or clashes and optimise public funding and resources to achieve greater impact.**

Starting with renovation strategies in the public (social) housing segment could reinforce the role of public authorities to lead by example. By defining a clear volume of renovations in this segment, public authorities could create market commitments to stimulate the renovation industry, try innovative solutions to enhance renovation processes and results, and enable the transfer of good practices to actors addressing other building segments. For instance, **the results of renovation efforts in the public social housing segment can be used to establish feasible requirements for housing associations and other social housing providers to improve the average energy performance of their portfolio.**

Vulnerable neighbourhoods

Previous practices have also focused on identifying regions and communities at risk of energy poverty or other types of poverty (see Box 2). **A policy instrument targeting the renovation of districts or neighbourhoods with a large share of vulnerable households can contribute significantly to the implementation of Art.9(2), benefiting from economies of scale.** Strengthening the sense of neighbourhood, community and cooperation can pave the way to empowering network-based initiatives.[47] This kind of instrument requires tight coordination with local authorities, who can help identify such regions and may also have better knowledge of the needs of the targeted population and particularities of the renovation industry ecosystem in the region.

This approach is particularly relevant in countries like Poland, where many residential buildings are supplied by district heating, and comprehensive interventions could be deployed to renovate buildings, decarbonise heating supply and renew neighbourhood public spaces.

[47] Local governance and network-based policies for housing energy-related renovations: insights from a Portuguese case

Neighbourhood and district approaches can also be linked to the energy community concept. Recent pilot initiatives have created energy communities, including agreements to ensure that a certain percentage of the energy generated goes to vulnerable households within the community.[48] A policy instrument prioritising districts or neighbourhoods can also be linked to the roll-out of one-stop shops as per EPBD Article 18. **Dedicated one-stop shops can be deployed in districts selected due to their share of vulnerable households and worst-performing buildings. Similar efforts can be developed to target rural areas with large concentrations of vulnerable households and worst-performing buildings.**

This is crucial in countries such as Romania and Poland, where more than 40% of the residential building stock is located in rural areas.

Dedicated one-stop shops should not only include technical specialists in their teams but also incorporate social workers or work closely with social services departments to ensure awareness and sensitivity when engaging with vulnerable groups. **The lessons learned from this initial strategy can be used to create renovation roadmaps for other districts in a second or third rank of priority.** These roadmaps can be used to attract renovation providers through one-stop shops to team up and develop large-scale renovation projects.

Monitoring social impacts

Any policy instrument designed for vulnerable households needs to be accompanied of a strong monitoring system, first to ensure that the population benefiting from the support strategies is really part of the targeted group, and second to capture and monitor valuable data on all the social, environmental and economic benefits that may derive from the renovations. In the case of neighbourhood and district approaches, this monitoring can enable the analysis of broader benefits in terms of health, air quality, social cohesion and more. This data should be properly aggregated and showcased to trigger replication.

Box 2 Examples of existing practices addressing vulnerable groups

In **Romania**, the **"Moderate energy renovation of multi-family residential buildings for communities at risk of poverty and social exclusion" programme** under the National Recovery and Resilience Plan aims to improve energy efficiency in residential buildings, partly focusing on vulnerable households. It provides funding for energy renovations, focusing on insulation, heating systems and renewable energy integration. The programme **especially targets buildings located in marginalised areas**, being identified either in the Atlas of Marginalized Urban Areas in Romania based on the information sent by 176 town halls, respectively in the Atlas of Marginalized Rural Areas and Local Human Development in Romania.

[48] See the example of Pamplona, Spain

Alternatively, eligible municipalities are being identified through local development strategies or integrated urban development strategies. The call was open throughout 2022, with selected projects beginning by 30 June 2026.

Programa Vale Eficiência II in Portugal specifically targets low-income households. The programme aims to reduce energy poverty and vulnerability by offering up to three efficiency bonuses, each worth €1,300, to economically vulnerable families living in buildings at risk of energy poverty. These bonuses are intended to help improve the energy efficiency of their homes and enhance their overall living conditions. The programme was adjusted to provide support during the application process and simplify the process for the final approval.

In the **UK**, grant schemes target low-income households to benefit from energy efficiency improvements. These programmes, financed by obligated companies, use EPC and specific qualifying criteria, such as recipients of various social security benefits. The ECO scheme provides grants for various energy efficiency measures like insulation and heating upgrades, but also the installation of heat pumps. By **linking grants to household income and benefit status, these initiatives aim to reduce energy costs, improve comfort and lower carbon emissions for vulnerable households**.

3.3 Pursuing replicability and upscaling

The EPBD trajectory for the progressive renovation of the residential building stock creates clear targets and five-year milestones that require a structural acceleration and scaling up of current renovation practices to increase renovation rates and energy savings. Member States need to identify and incentivise renovation practices that can be easily replicated across the residential building stock. To do this, **it is essential to identify the building segments where high levels of homogeneity exist, allowing for the design of dedicated renovation efforts.**

As part of the efforts to characterise the building stock, national and local authorities (when involved) can identify building segments with similar characteristics – due to their construction period, particular regional construction practices, or special previous urban developments. Once a set of building segments (e.g. detached single-family houses built 1950-80) and regions where they are common have been identified, **dedicated one-stop shops specialised in solutions for those building segments can be created in the related regions.** These specialised one-stop shops can run tailored communication and awareness campaigns to contact building owners and tenants.

In Poland, statistical data has shown certain patterns of urban developments and construction. The oldest buildings, built before 1918, are most numerous in the voivodeships of Lower Silesia, Lubusz and Opole. For buildings built between 1918 and 1944, the largest numbers are located in Lower Silesia and Silesia.

Public buildings and public funding can also drive replicability. **Public buildings can be a testbed for plug-and-play[49] solutions or serial renovation approaches.** Member States should streamline these kinds of solutions in their renovation efforts as part of the EPBD and EED implementation. Rules in public procurement can include incentives for plug-and-play or serial renovation solutions, supporting their uptake. **Financial support for building owners (e.g. grants, subsidies) can also include extra incentives for building owners using these kinds of solutions in their renovation projects.** Replicability can improve affordability of renovation actions and further increase of renovation rates.

Box 3 Examples of existing practices aiming at replicability of renovation solutions

Paris has set a target to renovate 43,000 condominiums (1.2 million apartments) by 2050, requiring a significant increase in the renovation rate. Two tools have been developed to assist in this goal: Coach Copro and EnerSIG. The former acts as a one-stop shop dedicated to condominiums, informing homeowners on their options and assisting in access to finance, while the latter acts as an online data platform. EnerSIG maps buildings and land plots and provides data on energy consumption and renewable energy potential. The tool can be used to identify the worst-performing buildings, find similar clusters of buildings, or understand the energy performance of an entire district for larger-scale renovation projects.

The **German energy agency** is receiving ministerial support for a **market development team to facilitate and de-risk the uptake of serial renovation solutions**. Part of their work is a match-making function to make sure that supply and demand sides are not stuck in a chicken-and-egg problem. The initiative is accompanied by a **subsidy bonus for serial renovation** as part of the general support programme for building renovation.

[49] Plug-and-play solutions, such as prefabricated and modular systems, can be installed quickly and connected with minimal effort on-site or without adjustments to existing structures. They enable fast, standardised and scalable renovations by integrating elements such as insulation, energy systems or smart controls into ready-to-install units.

3.4 Effective governance

Cohesive integration of efforts

The implementation of the EPBD requires activities such as the collection and analysis of data to characterise the residential building stock and create a national building energy performance database; the development and delivery of technical assistance and financial support measures; monitoring, enforcement and penalties (if any) for renovation obligations; and collecting data about renovation rates, energy savings, social impacts, etc. for the national reporting obligations as part of NBRPs. All these activities should be streamlined in a cohesive way throughout the final policy package for Art.9(2).

Particularly, NBRPs should be the backbone to integrate all the provisions. **The public consultation for the development of NBRPs required by the EPBD needs to be strong and ideally continue after the submission of the plans. National governments should avoid the case where policy instruments are designed at the national level and local authorities and actors are expected to implement them without any previous involvement in the process.** Horizontal coordination is also required. The targets to improve the average primary energy use of the residential building stock require actions to address buildings, energy matrix, renovation industry, vulnerable groups and many others. All the pertinent public administration entities, energy agencies, urban development offices, social services departments, etc. need to be involved. Data for EPBD provisions provides another meeting point – data on energy performance and socio-economic indicators needs to be captured in an integrated manner.

Procedural considerations

Policy instruments for the implementation of Art.9(2) should have **a) well-defined roles and responsibilities across actors and institutions, b) a clear timeline and points of interaction with building owners/tenants, and c) room for piloting and adjustment periods.**

The role of municipalities and other local and regional actors needs to be better defined. Who should provide, collect and manage building stock data, contact buildings owners, or implement compliance mechanisms? Local and regional entities can be facilitators and intermediaries to engage homeowners in renovation programmes.[50] In certain local contexts, homogeneity across the building stock and populations represents a significant opportunity to equip municipalities with tailored renovation programmes that could reach larger portions of the local population.

The roles and responsibilities of national and local actors closely relate to how building owners/ tenants access technical and financial support programmes. For example, who (e.g. urban planning office) contacts the building owners, how (e.g. direct letter, indirect campaigns) and when (e.g. at point of sale)? **Policy instruments for renovation should ensure easy access to the services and benefits they offer, avoiding complex channels and application procedures and the need to deal with multiple administrations for one renovation project.** Simple, user-friendly services and communication are fundamental.[51] Building owners' associations can be a first contact point, and should be supported to assess, prioritise and initiate renovation projects.

[50] Local governance and network-based policies for housing energy-related renovations: insights from a Portuguese case
[51] Policy innovation for building renovation

Policy instruments for renovation require continuous evaluation and prompt adjustments. The balance between adjustments and continuity is crucial. Policy instruments should have room for trials and adjustments before they are fully established to provide certainty and positive signals to the market and actors. For instance, **by piloting policy instruments in key regions, national governments can refine them and lower the risk for small municipalities. Lessons learned from the pilot municipalities can then be transferred to municipalities with lower capacity.** The existing literature suggests that during implementation, cities either compete or learn from each other. Once regions perceived as more innovative and advanced adopt a new policy, other cities and regions tend to follow their example.[52] The desire to be perceived as innovative and advanced compared with other regions can be a powerful motivation, as is the fear of being left behind; there is also less risk involved in implementing a policy that has already been tested.[53]

Box 4 Examples of existing practices aiming at simplifying access to renovation programmes

The **Lithuanian multi-apartment building renovation (modernisation) programme**,[54] administered by the APVA, emphasises the role of municipalities. Municipalities identify the most energy-inefficient buildings and appoint programme administrators to oversee the renovation process. This model removes the burden of organisational, financial and project management tasks from homeowners, ensuring that energy efficiency improvements are well-coordinated and executed without placing additional responsibilities on residents. The approach is designed to significantly lower energy consumption and carbon emissions while enhancing living conditions.

3.5 Affordability of renovations and mobilisation of investments

Making renovation affordable for building users is critical. Economic instruments to support renovations may be financial (e.g. loans, grants and subsidies), fiscal (e.g. tax credits, VAT reductions) or market-based (e.g. energy saving obligations, white certificates, etc.). For any instrument supporting the mobilisation of funds for renovation, it is crucial to ensure continuity and to establish a clear plan for mid-term and long-term funds. Access to private financing also needs to be facilitated. For instance, vulnerable households often have poor risk profiles when trying to access bank loans for renovation. Here, **an option could be to develop the legal framework and build capacity for building owners' associations to request collective loans, instead of requiring single building owners to apply for loans.**

The guidance from the European Commission regarding the implementation of EPBD Article 17 presents multiple details on financing instruments aligned not only with the EPBD but also other directives such as the EED.[55,56]

[52] Innovations in climate policy: the politics of invention, diffusion, and evaluation
[53] Building policy innovation exchange
[54] Daugiabučių namų atnaujinimo (modernizavimo) programa
[55] Financial incentives, skills and market barriers (Article 17) and one-stop shops (Article 18)
[56] For more details on financing instruments for the implementation of Art.9(2), a dedicated report on *Guidance on financing instruments and technical assistance for low-income households living in WPB in view of the SCP* is being prepared as part of the JustReno project.

3.6 Measures for dedicated building segments

While creating dedicated policy instruments for different building segments may require greater administrative effort, it can lead to higher renovation rates and greater energy savings. The residential building stock can be segmented by factors such as age, typology, location, climate zone, ownership and energy performance. Tailored policies can better address these specific characteristics – for example, supporting passive cooling and efficient cooling systems in warm climates, or focusing on insulation and heating technologies in colder regions. The design of such segmentation ultimately depends on the data each Member State collects on its building stock, the patterns identified, and the priorities set by public authorities. The following subsections describe options to tackle rental, rural and vacant building segments.

The rental segment

The EPBD requires Member States not to disproportionately exempt rental residential buildings or building units in their renovation efforts. Article 17 also requires Member States to address the eviction of vulnerable households caused by disproportionate rent increases following renovation.

This requires that **Member States design dedicated policy instruments to**:

- **Encourage landlords to renovate buildings occupied by tenants**
- **Address split incentives**
- **Avoid disproportionate rent increases.**

Policies should encourage dialogue between landlords and tenants about renovation timing, rent increases, inconveniences, etc.

To address split incentives, the EED guidelines[57] mention regulatory measures such as MEPS, revisions of rent laws and condominium laws, and individual metering or submetering, as required under Directive EU/2023/1791, which enables tenants to become more aware of their energy consumption. More details can be found in the Commission's recommendation for the implementation of EPBD Article 17.[58]

To avoid disproportionate rent increases, **rent increase caps can be established**, e.g. rent cannot increase by more than 10% after renovation. **The rent increase can be also linked to the energy savings obtained**, so that the rent increase is equal to or lower than the reduction in energy bills. **Rent adjustments can also be connected to the energy performance class achieved after renovation**; for instance, landlords can increase the rent by a maximum value (e.g. 10%) only when they have conducted a deep renovation and achieved a certain EPC class. For other cases, the allowed rent increase would be lower.

Where financial support instruments such as subsidies for renovation are in place, strong monitoring mechanisms should be deployed to avoid landlords reclaiming through rent increases the costs that were actually covered through a subsidy scheme.

[57] Commission Recommendation (EU) 2024/2481 of 13 September 2024 setting out guidelines for the interpretation of Articles 21, 22 and 24 of Directive (EU) 2023/1791 of the European Parliament and of the Council as regards the consumer related provisions
[58] Financial incentives, skills and market barriers (Article 17) and one-stop shops (Article 18)

Box 5 Examples of existing practices aimed at limiting disproportionate rent increases

In the **Netherlands**, the **maximum rent for a property is linked to its energy performance through** the **woningwaarderingsstelsel** (rental points system). Energy efficiency, assessed via energy labels, adds points that allow for higher rents. Since 2021, energy labels directly influence rent points, with distinctions made between independent and shared living spaces. Renovations that improve a property's energy performance can therefore increase allowable rents, though landlords are required to inform tenants of these changes.

Rural areas

Renovation in rural areas requires tailored strategies, as these regions face distinct challenges such as an ageing population, an older and more diverse building stock, and limited access to contractors, technical information, financial support and even basic housing services. Recent research[59] highlights these differences, showing that cost-effective solutions in rural areas may be different due to specific construction practices or the availability of certain energy sources.

In Poland and Romania, more than 40% of the residential building stock is located in rural areas. In these countries, a policy instrument targeting rural buildings should be a priority for the policy package of Art.9(2).

One-stop shops are crucial for addressing the specific needs of rural areas.[60] Under Article 18 of the EPBD, **Member States can choose from different criteria to establish one-stop shops, three of which can explicitly target rural contexts:** (a) allocating one per 80,000 inhabitants, (b) assigning them per region, or (c) prioritising areas where the average building age exceeds the national average. Placing one-stop shops in rural areas helps overcome barriers such as limited access to information about technical and financial support options. Building networks between rural one-stop shops and with other actors is essential to share knowledge, complement local capacities and fill gaps that small communities cannot address alone. Initiatives such as the Rural Pact[61] and the community group Energy transition in rural areas[62] provide useful starting points for cooperation and orientation. Transferring lessons learned from strategies such as the development of SECAPs can also help to strengthen roadmaps for rural areas.

Hungary and Romania have 300 and 30 municipalities respectively already involved in the development of SECAPS. This represents an opportunity to transfer lessons learned to smaller and rural municipalities.

[59] New RENOVERTY Factsheets detail data-driven energy efficiency solutions for rural households in 7 countries
[60] An example is EcoVision, a community-led, not-for-profit cooperative that operates as a one-stop shop. Originating as a local initiative in rural Ireland with support from the Sustainable Energy Authority of Ireland and the Better Energy Communities scheme, it has since grown into a cooperative of 15 members. To date, it has supported the renovation of more than 950 buildings, mobilising €18 million in investment.
[61] Rural pact
[62] Energy transition in rural areas group

Vacant buildings and demolition

Reactivating and renovating long-term vacant buildings represents a two-fold opportunity for Member States. First, the renovation of these buildings will contribute to improving the average primary energy use of the residential stock. Second, it can make more housing available, which could help alleviate housing crises in regions with high demand. The reactivation of vacant buildings should be prioritised over demolition and construction of new housing. This is especially relevant in light of the EPBD provision in Articles 7 and 11 regarding zero-emission buildings becoming the standard for new buildings and Member States' obligation to limit and progressively reduce the total cumulative life-cycle global warming potential (GWP) of all new buildings from 2030. This will start capturing the environmental life-cycle impacts of new buildings, which very often are higher than those of renovation. **Member States should promptly establish the limit values on cumulative life-cycle GWP** so these can be considered in long-term urban renovation plans, which may otherwise opt for demolitions and new buildings. Since these urban plans are often developed at the local level, **Member States should provide municipalities with tools to easily understand the life-cycle GWP balance of revitalising vacant buildings vs. new buildings.**

Dealing with vacant buildings requires an extra layer of information on the building to understand the reasons behind the vacancy. It is crucial to understand whether the vacancy is related to involuntary circumstances such as depopulation, legal disputes, unaffordable renovation or personal reasons (e.g. health issues); or voluntary circumstances such as market speculation and treating the property as a second home. The urban context is also relevant. Renovation may not be enough to ensure that a vacant building is reactivated, especially in cases where the building is located in an isolated neighbourhood or rural area experiencing depopulation. To trigger the reactivation of vacant buildings, Member States can use mechanisms such as tax and regulatory reliefs and mutual beneficial rental agreements. For instance, landlords could receive support for renovation if they agree to offer the building into the rental market for a minimum period. While this may not be a long-term solution, it could help alleviate housing issues in regions experiencing high demand.

4 JustReno

Synthesis and exemplary cases

This chapter synthesises the concepts discussed in chapters 2 and 3. Based on the findings about the contextual aspects related to the building stock, socio-economic elements and existing policy frameworks, three hypothetical country profiles with distinctive characteristics are created. For each profile, a policy package to implement EPBD Art.9(2) is developed.

The profiles correspond to:

1. A country with a large portion of its building stock located in rural areas as single-family home.
2. A country with a high share of floor area in owner-occupied apartment buildings in medium-sized and larger cities.
3. A country with a large rate of rental residential buildings located primarily in two different climatic zones.

The country profiles aim to provide inspiration for the design of policy packages. Member States across Europe will have to implement their own policy mix, which needs to be thoroughly assessed upfront in consultation with different stakeholders. The purpose is not to define precise policy packages for a specific country. However, using some typical segmentations of the building stock, this synthesis may provide ideas for key features and starting points to develop the policy mix. All of the policy mixes may be relevant in some countries if typical building stock segments are present.

The country profiles do not correspond to any specific country but illustrate some typical cases in Europe. Similarly, the policy packages are not meant to refer to specific countries but represent a mix of existing good practice from across Europe. From the analysis of existing practices, we identified three important features that should be clearly spelled out in any policy package:

- Determine accountable actors
- Set up a clear implementation process allocating responsibilities for different stakeholders
- Make use of existing institutions (i.e. organisations, rules, established stakeholders) to anchor new or adapted policies.

4.1 Generic country profile 1: the rural building stock is predominant

Country context

In country 1, 62% of the residential floor area is made up of single-family buildings located in rural and less densely populated areas, characterised by scattered housing, small municipalities, low administrative capacities and limited access to information and renovation services. There is a large dependency on solid fuels (including biomass) for heating. These buildings represent the highest share of the worst-performing buildings in country 1. The houses are generally old, and the lack of proper insulation is a common problem. Renovations are usually individually managed, and the decision-making and logistics are the responsibility of the homeowners. At the same time, house prices in the rural areas are relatively low compared to the cost of a deep renovation so there is no immediate incentive for homeowners to carry out deep renovations. There is also a significant share of rural vacancies and an ageing population.

Overall strategy

To add value to the renovation of buildings, a general revitalisation of communal life should be part of the strategy. Knowing about vacancies and expected demand for housing in the future should guide investment strategies.

Renovating public buildings and empowering municipal actors to deliver renovations are key to revitalise the building stock alongside communal life. To translate the long-term target of a decarbonised building stock, including life-cycle emissions, into a vision for the rural areas, a municipal building stock modernisation strategy focuses on the use of solar thermal as well as the electrification of heat supply through a combination of solar PV and heat pumps.

Policy package

Renovation pact for municipalities (voluntary but binding commitment combined with grant programme) + renovation passport obligation for priority groups + capacity building for local construction supply chain including on renovation passports and their implementation.

Implementation steps:

1 Verify which buildings belong to the 43% worst-performing buildings in targeted rural areas

Since the worst-performing buildings are mostly located in rural areas, we can assume that a significant share (e.g. more than 60%) of buildings are worst-performing. A simple proxy should be sufficient to distinguish whether a building is worst-performing or not (e.g. year of construction). Those buildings should be the main target group of policies to incentivise renovation. However, if more data e.g. on public buildings is available or resources allow (e.g. if a wider database on the national building stock and its performance is being developed), it would be beneficial to also understand the situation of vacant buildings as their revitalisation could be part of a municipal renovation strategy.

2 Define vulnerable households in the rural context

All homeowners in rural areas living in worst-performing buildings with low property prices could be considered as vulnerable households. An additional criterion, such as distance to closest intermediate city, could be defined to better identify vulnerable households.

3 Renovation pact for municipalities

Establish a renovation pact for municipalities to achieve a target representing certain percentages of the overall energy renovation targets expressed in EED Article 5 and EPBD Art.9(2). The municipalities receive financial support depending on the renovation target they agree with the relevant national ministry (or appropriate subordinate authority). The target will always contain a share of public buildings to be renovated and a share of residential buildings to be renovated (priority: worst-performing buildings and vulnerable households).

Part of the pact is to provide renovation passports for the public buildings being renovated and the priority buildings identified by the municipalities. By first renovating public buildings according to a renovation passport, a blueprint for renovation can be created for further dissemination at the local level. This creates an opportunity to familiarise the local renovation supply chain with renovation passports and plan and coordinate renovation activities accordingly.

To ensure capacity building is happening, it is important to appoint staff at the municipal level responsible to provide information about renovation benefits and identify vulnerable households in worst-performing buildings. If human resources are too scarce, a mobile consultancy that covers more than one municipality could be a viable option. These consultants would be responsible for coordinating the provision of renovation passports, demonstrating how to transform the heat supply from biomass towards solar energy and heat pumps, and the thermal insulation needed to make the heat supply work efficiently to meet milestones for the residential buildings sector under EPBD Art.9(2).

The staff at the local level, e.g. energy auditors, can be the starting point for developing local one-stop shops on the energy performance of buildings (EPBD Article 18), e.g. in cooperation with other municipalities in the region. Municipalities that are already committed to a SECAP may find synergies to integrate additional services into the existing infrastructure.

Addressing vulnerable households	Worst-performing buildings sub-target
Vulnerable households are expected to strongly overlap with households living in the worst-performing buildings in rural areas – except for vacant ones. This is especially true since property prices are relatively low, meaning homeowners generally have little capital.	By focusing on rural areas, worst-performing buildings are more likely to be tackled since the building stock is on average older; to ensure they are really being targeted, a proxy definition is defined before starting the programme.

Financial strategy

Grant programme (financed via SCF)

- Renovation passports for free for vulnerable households
- First steps to implement the renovation passports will be financed by grant if energy performance is compliant with roadmap towards 2050.

Links to other provisions and directives

Municipal responsibilities may be the starting point to develop a one-stop shop for renovation. If the municipality is too small, a regional cluster of municipalities with renovation pact (and/or SECAP) can provide a one-stop shop for that region.

The identification of priority areas in the municipalities should be aligned with SECAPs where applicable. Municipalities with SECAPs may find synergies in agreeing to ambitious renovation pacts.

In short

Accountable actors

Ministerial level:

- Achieving the 3% renovation target for public buildings (EED)
- Improving the energy performance of buildings in line with the national trajectory for the residential building stock (EPBD Art.9(2))
- Achieving 55% of that target in the worst-performing 43%.

Municipality:

- Implementing allocated renovation target as part of a) their own building stock, and b) single-family homes
- Providing renovation passports to priority buildings.

Implementation

Ministerial level:

- Allocate renovation target to municipalities
- Grant programme to a) renovate and b) provide renovation passports in rural areas.

Municipalities:

- Identify priority buildings through cadastres or other available data using simple indicators such as year of construction
- Contact priority building owners and coordinate activities to establish renovation passports and follow-up renovation activities.

Institutional anchorage:

- Capacity building within the municipalities through dedicated staff – possibly linked to regional cluster one-stop shops
- Synergies with and possible integration into SECAPs
- Verification through energy performance certificates.

4.2 Generic country profile 2: owner-occupied apartment buildings

Country context

Country 2 is dominated by a large share of owner-occupied apartment buildings. The buildings were typically built after the second world war in the Soviet era. Most of the apartment blocks are managed by homeowner associations that have the mandate to carry out basic maintenance services and speak on behalf of the owners if decisions are taken. Decision-making for building renovation is often complicated as it requires the consent of the majority of the building owners. While often the homeowner association is best placed to act as a main renovation coordinator, they lack financial and human resources to do so in practice.

Overall strategy

The overall aim is to appoint responsible actors to carry out the renovation planning and implementation among the worst-performing apartment buildings. Renovation planning should be in line with existing municipal heating and cooling planning which is required according to EED Article 25 and could be integrated into SECAPs.

Since the apartment buildings are similar in construction, but also in view of their ownership structure, there is significant potential to standardise renovation solutions.

The first step would be to identify the priority areas, and create and aggregate demand by appointing a responsible team for action. Support can be provided through one-stop shops that act as an integrated service provider to scale renovation solutions by standardising them, making them more affordable. Even in a more heterogenous multi-family house segment, standardised approaches to renovation processes may help to reduce costs.

Policy package

Integrated renovation and heating planning to prioritise vulnerable households and worst-performing buildings in the subsegment of large apartment blocks + income-specific grant programme to renovate the building within its neighbourhood + one-stop shops specialised to cooperate with owner-occupied multi-family buildings and homeowner associations and deliver standardised solutions.

Implementation steps:

1 Align heating and cooling plans with renovation efforts and identify priority neighbourhoods

Larger municipalities (>45 000 inhabitants) need to set up heating and cooling plans in accordance with the energy efficiency first principle and analyse how to address worst-performing buildings and vulnerable households (EED Article 25 (6)). In addition, many cities have established SECAPs. Both can be starting points for local authorities to integrate renovation planning and collect and analyse data to prioritise areas and neighbourhoods with worst-performing apartment buildings at least partly inhabited by vulnerable households.

If these activities are still at a low pace, the cities should define – based on cadastre or other data at their disposal – e.g. the year of construction as an indicator to prioritise buildings and preferably neighbourhoods for renovation to implement Art.9(2).

2 Establish synergies between one-stop shops and homeowner associations

In parallel, when regionally rolling out one-stop shops, national public authorities should dedicate funding to develop specific one-stop shops to cooperate with homeowner associations. They could be set up like energy service companies, offering energy performance contracting solutions in cooperation with the homeowner association. Receiving information about the homeowner associations in the priority areas, they should be in a position to bundle projects and develop standardised and integrated renovation solutions in cooperation with the local supply chain. The public authority (national level, e.g. national development bank) should provide core funding to set up the one-stop shop and step in with guarantees if the savings are smaller than expected. The one-stop shops will be responsible to achieve a share of the national target to renovate worst-performing residential buildings in line with EPBD Art.9(2).

Homeowner associations should be obliged to meet the one-stop shops and to initiate a vote with the homeowners.

Addressing vulnerable households	Worst-performing buildings sub-target
Income-differentiated grants	Only worst-performing buildings are eligible to receive grants

Financial strategy	Links to other provisions and directives
• Energy service company type of financing through the local one-stop shop	EPBD Article 18 on one-stop shops SECAP
• Partial payback through capped modernisation fee collected by the homeowner association, partially paid by grant financed by the SCF for vulnerable households within the building/pool of buildings	Municipal heating and cooling plans

In short

Accountable actors

- Performance-based one-stop shops to deliver on energy performance targets in order to receive financial support from the national governments.
- Homeowner associations to consult with the one-stop shop and initiate a vote with their members.
- Public authority (national level, national development bank or similar) to provide guarantees if one-stop shop fails to deliver.

Implementation

- Municipalities provide data to help prioritise renovation among vulnerable households and worst-performing buildings.
- Homeowner associations coordinate with the regional one-stop shop to facilitate renovation contracts with priority areas.
- Upfront financing through one-stop shop that aggregates demand, realises standardised solutions and acts as a centre for capacity building at the local level.

Institutional anchorage

- Existing actors and institutions (homeowner associations, local administration, energy agencies/one-stop shops)
- SECAP
- Heating and cooling plans according to EED Article 25(6).

4.3 Generic country profile 3: large population lives in rental buildings in two distinct climate zones

Country context

In Country 3 around half of the households live in rental buildings. There are two well-differentiated climate zones, with around 25% of the residential building stock located in warm coastal regions, and another 30% in continental climate regions. Construction practices and climate conditions have influenced the characteristics of the residential building stock in these two regions. Triggering renovations is challenging due to split incentives between landlords and tenants. Landlords bear the upfront renovation costs, but do not directly benefit from lower energy bills or improved comfort. Tenants face high bills and discomfort but cannot invest in renovations since they do not own the dwelling. Regulation of rental agreements is rather outdated. In addition, an increase in holiday rentals in coastal areas is putting pressure on the housing market, driving up costs considerably.

Overall strategy

The EPBD underlines the importance to also address rental buildings with targeted policy instruments. The rental segment affects vulnerable households in several ways, each of which should be addressed separately.

First, it is important to identify the landlords of worst-performing buildings for them to become active. A governance system therefore needs to be established to implement and enforce measures in the worst-performing buildings segment. This has to be accompanied by a financing strategy that allocates the renovation costs fairly between the landlord, tenants and public authorities.

Second, the different climate zones come with specific challenges that need to be addressed through a mix of accompanying measures. Overheating requires a combination of renovation and adaptation measures. Short-term tourist rentals in coastal regions put additional pressure on vulnerable populations. This needs to be treated by a mix of stricter regulation and community-building measures including better use of the existing building stock.

Policy package

Landlord registry + enforcement scheme in public authority + fair division of costs by targeted grant. Additional mix of measures to address particularities of different climate zones: Regulation + community-building measures.

Implementation steps:

1 Establish a mechanism to identify landlords

Identifying a threshold determining worst-performing buildings at the national level is not sufficient to ensure renovation measures are implemented in this specific building segment.

The building owner has to be identified to ensure they are aware of the energy performance of their building. Member States may choose to establish a compulsory target for the rental segment, i.e. a MEPS scheme. If it is mandatory to reach a certain performance level by a certain time, it becomes even more important to identify the building owners and find ways to approach them. But it is also an advantage to be able to contact them to provide information about the energy performance of the building and available grant schemes to renovate their building. A middle way between a MEPS scheme and providing information only would be an EPC obligation for buildings built before a certain year of construction to verify if it belongs to the worst-performing building segment.

The first part of the policy package is to set up a landlord registry that provides basic information about the building and enables municipalities to contact the building owner.

2 Define governance for implementation and enforcement

In a second step, a governance scheme has to be established within the local public authority to enact any further steps (e.g. verifying EPCs, providing information and follow-up, or tracking the implementation of MEPS). The public authority accountable for this could be the municipal government or the land registry office.

It could e.g. determine the way landlords are contacted (e.g. start with an email invitation to take part in an information session, followed by a postal letter to ask for an EPC or to participate in a survey, reminder letters, and then enforcement steps such as deciding on fines for non-compliance with the rules).

An important part is to inform the landlords about available grant schemes to renovate worst-performing buildings. To avoid landlords passing on all costs to their tenants, there should be a cap on rent increases and an obligation to use public grants if eligible. Grant schemes should be differentiated according to climate zone to create synergies between renovation and adaptation to heat stress. Adaptation measures reduce exposure to climate risks and therefore contribute to retaining the value of the property, which could spark interest in renovation.

3 Address short-term rentals

To relieve pressure on the housing market due to short-term tourist rentals in coastal regions, stricter regulations are one part of the solution (mandatory registration of short-term rentals to ensure local tax rules are applied, zoning and ban on new holiday flats, tourist tax, etc.).
One result of a tense housing market is that vulnerable households are pushed into worse-performing housing segments. It is therefore important to ensure that those buildings and neighbourhoods are well targeted through renovation policies that also increase the value of the whole neighbourhood and improve living conditions, including better indoor air quality. As overheating in the summer is a growing concern in warmer regions, measures should be put in place not only to decarbonise heat supply but also to upgrade the building envelope to protect from heat and cold.

Finally, tourist regions usually have high employment peaks over the summer months. Integrating the workforce during off-season times to contribute to the renovation and upgrading of their neighbourhoods will enhance upskilling of the local workforce, local value creation and community building.

Addressing vulnerable households

Vulnerable households are overrepresented in the rental segment and thus very likely to be addressed through renovation strategies.

Worst-performing buildings sub-target

The policy package is specifically addressing worst-performing residential buildings.

Financial strategy

Share of renovation costs between public authorities (through grant scheme), landlords and tenants. The latter contribute through a moderate increase in rent that should be equal to the savings achieved through the renovation measures (e.g. a cap of a rent increase of max. 3%).

Links to other provisions and directives

Subnational responsibilities (urban planning, data collection/cadastres, etc.)

In short

Accountable actors

Public authorities at local level:

- Enforce binding obligations

Landlords:

- Register in landlord registry
- Provide EPC (if required)
- Attend information meetings, forwarding information to tenants

Implementation

Public authorities at local level:

- Set up landlord registry
- Establish cascade of information and enforcement scheme

Institutional anchorage

- Existing public authorities (e.g. cadastre authorities)
- Landlord registry through their associations

JustReno

About the project

JustReno is providing support for implementing EU building renovation policies in Hungary, Poland, and Romania, ensuring a socially just transition by prioritising worst-performing buildings and vulnerable households. The aim of the project is to strengthen the capacity of policymakers and municipalities in the three countries to implement EU building renovation policies. It helps to identify worst-performing buildings, supports financial planning for energy renovations, and promotes cooperation between local and national governance levels. Through knowledge-sharing events, workshops, and technical assistance, the project ensures that renovation efforts effectively reduce emissions while improving living conditions for vulnerable households. By linking building renovations with Social Climate Plans and local heating strategies, the project facilitates a fair and efficient transition to a low-carbon building sector.

Project partners

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