BRINGING EUROPEAN BUILDING POLICY TO LIFE

Development of National Building Renovation Plans: Policy Guideline Summary

Ece Özer, Lukas Kranzl (TU Wien)
Andreas Müller, Francesca Conselvan (e-think energy research)
Sara Ortner (ifeu)

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Authors
Ece Özer, Lukas Kranzl, TU Wien
Andreas Müller, Francesca Conselvan, e-think energy research
Sara Ortner, ifeu

Reviewers
Bettina Sticher, SERA
Susanne Geissler, SERA

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Graphic design
Georgina Baker

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About EPBD.wise

EPBD.wise aims to kickstart action to bring to life the recast European Energy Performance of Buildings Directive (EPBD) as part of making EU climate goals a reality. Over the course of three years, project partners worked with public authorities (such as municipalities, energy agencies, etc.) in six European countries: Bulgaria, Greece, Hungary, Poland, Romania and Ukraine. The overarching aim was to ensure the design, implementation and evaluation of key provisions to ensure EU buildings align with climate goals. Starting with investigation of needs and good practices in the six focus countries, EPBD.wise builds replicable models to support the widespread implementation of effective measures across Europe.

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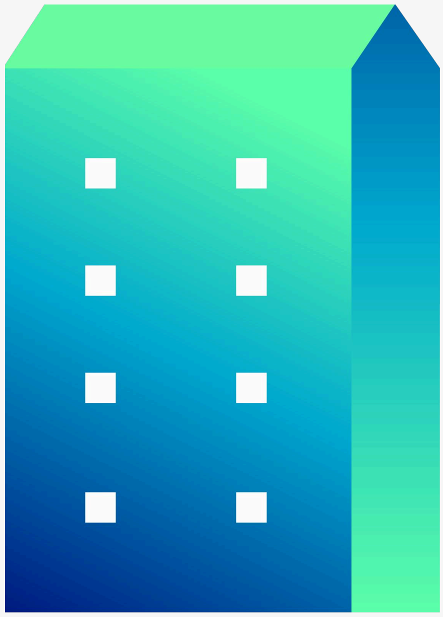

The Energy Performance of Buildings Directive (EPBD) requires all EU Member States to establish National Building Renovation Plans (NBRPs) – strategic documents that chart a credible path toward a fully decarbonised building stock by 2050. This deliverable provides policy guidance to support Member States in developing these plans.

The guidance is grounded in three pillars of work carried out within the EPBD.wise project. First, a structured assessment of policy needs across six focus countries [1] identified seven key areas where Member States require support, from building stock data collection to investment planning and stakeholder engagement. Second, detailed policy guidelines were developed for Poland, Romania and Ukraine [2], testing five renovation scenarios that range from strong regulatory approaches to purely market-based strategies. Third, the analysis was extended to all EU-27 Member States [3], using a clustering approach to group countries by shared characteristics. From these clusters, six exemplary countries – Ireland, Italy, Czechia, Germany, Lithuania and Croatia – were selected for comparative analysis.

The scenario results for the six representative countries confirm that a combination of regulatory standards and economic incentives is consistently more effective than either approach alone. Under the most ambitious scenario (Regulatory+, which combines minimum energy performance standards in both sectors with a fossil boiler ban and moderate economic incentives), all six countries achieve primary energy demand reductions of 15–22% by 2030 and 26–36% by 2035, broadly in line with the EPBD Article 9 targets.

By 2050, primary energy demand reductions range from 53% (Czechia) to 65% (Italy and Ireland). Fossil fuel shares in the final energy mix decline from as high as 83% (Ireland, 2020) to below 12% by 2050 across all countries. However, under scenarios without a fossil fuel ban or residential minimum energy performance standards (MEPS), fossil fuel phase-out slows significantly – particularly in Germany (49% fossil by 2050 under Moderate), Croatia (37–38%) and Ireland (29%).

These findings point to three priority actions for Member States developing their NBRPs: designing policy packages that combine mandatory performance standards with financial support and a credible fossil fuel phase-out timeline; investing in robust building stock data as the foundation for target-setting and monitoring; and ensuring coherence between the NBRP and related instruments such as Article 9 trajectories, MEPS, energy performance certificates, renovation passports, and zero-emission building definitions.

LIST OF

ABBREVIATIONS AND ACRONYMS

BSO	Building Stock Observatory
CDD	Cooling Degree Days
DH	District Heating
EC	European Commission
EED	Energy Efficiency Directive
EPBD	Energy Performance of Buildings Directive
EPC	Energy Performance Certificate
EU	European Union
FCCP	Focus country contact point
FED	Final energy demand
GFA	Gross floor area
GHG	Greenhouse gas
HDD	Heating Degree Days
JRC	Joint Research Centre
LTRS	Long-Term Renovation Strategy
MEPS	Minimum energy performance standards
MFH	Multi-family house
NBRP	National Building Renovation Plan
NECP	National Energy and Climate Plan
NZEB	Nearly-zero energy building
PED	Primary energy demand
PEF	Primary energy factor
RED III	Renewable Energy Directive
RP	Renovation Passport
SFH	Single-family house
SME	Small and medium-sized enterprise
V/A	Volume/Area
WPB	Worst-performing building
ZEB	Zero-emission building

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1

INTRODUCTION

This document provides support and recommendations to stakeholders and policymakers for developing National Building Renovation Plans (NBRPs). It identifies the specific parts in the NBRP template provided in Annex II of the Energy Performance of Buildings Directive (EPBD) to which the policy guidelines provide targeted inputs.
The drafting of the NBRP is closely connected to the development of other policy elements specified in the EPBD. There is a strong link to Article 9 in particular: the trajectories for progressive renovation of residential buildings and the minimum energy performance standards (MEPS) for non-residential buildings are integral to the NBRP, both as targets to be achieved and as the basis for identifying the policy measures needed to reach them.

1.1 Scope and objectives

This document focuses on the areas that emerged as most relevant through the EPBD.wise policy needs assessment [1], a series of stakeholder interactions, roundtables, and policy workshops. Two themes stand at the centre: building stock data – how to collect, organise, and use data on the national building stock as a foundation for evidence-based planning – and scenario development and policy analysis – how to design renovation scenarios and evaluate the impact of different policy instruments on the transformation of the building stock.

This report focuses on the key aspects and priority areas relevant to developing NBRPs, with topics selected based on specific needs identified and addressed within stakeholder dialogues and related analyses in the EPBD.wise project. The policy guidelines developed within EPBD.wise are structured around two complementary documents. This deliverable focuses on the broader NBRP framework under Article 3, while the companion report specifically addresses Article 9 implementation [3].

Table 1 clarifies how the two documents divide responsibilities across the key topics that Member States must address. While building stock data, scenario design and monitoring are covered in both, they differ in focus: this document treats these topics from the perspective of overall renovation planning, whereas the *Replication of Article 9 to other EU Member States* report concentrates on the specific requirements for worst-performing buildings and MEPS compliance [3].

Table 1: Distinction of content regarding policy guideline documents for NBRP and Article 9

	Policy guideline NBRP [2]	Policy guideline Article 9 [3]
Building stock data	Data collection and description of building stock data, including its distribution regarding energy consumption levels	How to derive the worst-performing buildings and 16th/26th quantile thresholds for MEPS
Modelling assumptions and scenario design	Overall modelling approach, scenario design and scenario framework data (e.g. energy prices)	Specific elements affecting the effectiveness of the Article 9 instrument, such as the evolution of primary energy factors
Scenario results	Overall pathway results, e.g. in terms of final energy demand by energy carrier	Specific results showing the target achievement of Article 9, split by residential and non-residential buildings
Checking target achievement	Overall evaluation of target achievement, including ZEB-consistency, RED consistency, and fossil fuel phase-out	Article 9 targets, in particular regarding the compliance of the trajectories for residential buildings
Stakeholder engagement	Included	Not included
Monitoring, evaluation	Monitoring of renovation activities and establishing a continuous feedback and evaluation mechanism	Focus on compliance with MEPS (non-residential buildings)

1.2 Context within EPBD.wise

This deliverable is the culmination of a multi-step process within the EPBD.wise project. The starting point was [1] to identify the key policy needs that Member States face when preparing their NBRPs, through desk research, stakeholder interviews and structured questionnaires across the six EPBD.wise focus countries (Bulgaria, Greece, Hungary, Poland, Romania and Ukraine). Seven main policy needs were identified: 1. better availability and understanding of building stock data; 2. support in defining policies aligned with EPBD targets, especially for worst-performing buildings; 3. understanding investment needs and how to leverage private investment; 4. dentifying and collecting data on worst-performing buildings; 5. developing measures for public buildings; 6. policies and actions on deep renovations; and 7. methods for drafting the renovation trajectories required by Article 9.

Building on this policy needs assessment, the policy guidelines report [2] developed detailed policy guidelines for Poland, Romania and Ukraine.

These guidelines applied the Invert/EE-Lab building stock model to quantify alternative renovation pathways, tested five policy scenarios per country, and produced concrete recommendations for NBRP development. This work provided the methodological template and hands-on experience that informs the present summary.

In parallel, the EU-wide replication analysis [3] extended the building stock modelling to all EU-27 Member States and applied a clustering analysis to identify groups of countries with similar starting points. From these clusters, six representative countries were selected for comparative scenario analysis. The present deliverable synthesises these three streams of work into a summary policy guideline that is relevant across the EU.

1.3 Structure of the deliverable

This document is organised as follows. Section 2 outlines the key requirements for effective NBRPs under the EPBD, including the mandatory elements, targets and indicators that each plan must address. Section 3 examines how Member States differ in their readiness to develop NBRPs, in terms of building stock data availability, energy carrier mix, primary energy factors, renovation rates, policy experience and climatic conditions, and presents a clustering analysis that groups countries with similar characteristics to identify six representative cases. Section 4 presents the scenario analysis and renovation roadmaps for the six representative countries. Section 5 brings together the recommendations, starting with building stock data methods and trade-offs, followed by policy choices, investment and financing, scenario development and governance, synergies with other EPBD instruments, and monitoring. Section 6 offers a synthesis and outlook.

2

NATIONAL BUILDING RENOVATION PLANS: A KEY PLANNING INSTRUMENT

National Building Renovation Plans represent a significant evolution from the Long-Term Renovation Strategies (LTRS) that Member States were previously required to submit under Article 2a of the 2018 EPBD. While the LTRS served as strategic documents outlining national visions for building renovation, experience showed that many fell short of providing the operational detail needed to drive actual implementation. An assessment by the Joint Research Centre (JRC) and BPIE found considerable variation in quality, with several strategies lacking quantified targets, clear policy measures, or adequate investment analysis [7]. NBRPs are designed to address these shortcomings by being more operational, detailed and binding.

NBRPs are introduced with the EPBD in Article 3, under which each Member State must establish a plan to ensure the renovation of the national stock of residential and non-residential buildings, both public and private, into a highly energy-efficient and decarbonised building stock by 2050. Buildings account for a large share of the EU's total energy use and greenhouse gas emissions. Consequently, NBRPs present an essential tool for Member States to synchronise their national initiatives with the EU's goal of achieving climate neutrality by 2050. They also help incorporate broader societal objectives, such as reducing energy poverty, fostering job creation, and enhancing indoor environmental quality. Article 3 outlines that each NBRP must include:

- an overview of the national building stock for different building types, including construction periods, climatic zones, market barriers, capacities in the construction and energy efficiency sectors, and the share of vulnerable households;

- a roadmap with nationally established targets and measurable progress indicators, including the reduction of the number of people affected by energy poverty, to achieve the 2050 climate-neutrality goal;
- an overview of implemented and planned policies and measures;
- an outline of the investment needs for the implementation of the NBRP, the financing sources and measures, and the administrative resources for building renovation;
- the thresholds for the operational greenhouse gas emissions and annual primary energy demand of a new or renovated ZEB;
- MEPS for non-residential buildings;
- a national trajectory for the renovation of the residential building stock, including the 2030 and 2035 milestones for average primary energy use in $kWh/m^2/yr$; and
- an evidence-based estimate of expected energy savings and wider benefits, including those related to indoor environmental quality.

Annex II of the EPBD provides additional information on the mandatory and optional indicators to be included in the NBRP. The European Commission published guidance and an NBRP-annotated template in June 2025.

3

DIFFERENT STARTING POINTS OF MEMBER STATES FOR SETTING UP NATIONAL BUILDING RENOVATION PLANS

Member States face fundamentally different conditions when developing their NBRPs. These differences span several dimensions that directly influence how an NBRP should be designed. In the following, we first discuss these dimensions, then identify exemplary countries representing different conditions and starting points, and finally present results for each country and derive recommendations based on these conditions.

The dimensions which we distinguish are: 1. availability and quality of building stock data, 2. expected growth of building stock, 3. mix of energy carriers and technologies currently used in the building stock, 4. recent renovation rate, 5. the broader energy system context and in particular the primary energy factor of electricity and (where relevant) of district heating, 6. previous experiences and ambition levels described in the LTRS, and 7. climatic conditions.

The **availability and quality of building stock data** vary considerably across the EU. Some countries maintain comprehensive building registers linked to energy performance certificates (EPCs), while others rely on fragmented or outdated information.

Without a reliable picture of the national building stock – including construction periods, building types, renovation status and energy carriers – it is difficult to identify worst-performing buildings, set credible targets, or design effective policy measures. Italy offers a notable example: its LTRS provides a detailed building stock overview, disaggregated by climatic zone, size, age and energy consumption, and is supported by a national portal on the energy performance of buildings [1]. Portugal has built a centralised EPC database with more than 2.5 million certificates and approximately 300 variables per building, demonstrating how an EPC system can evolve into a multi-purpose planning tool.

Countries and regions across Europe face different demographic and economic challenges and phases. Also, expected future population growth and the resulting growth of the building stock differ among countries. The growth of the building stock obviously affects the mix between new and renovated buildings. A higher share of new buildings makes it easier to achieve the target as defined in Art 9 (2) of the EPBD, and requires a particular, strengthened focus on achieving the targets only in existing buildings (see discussion and analysis in [3]), with resulting effects on the policy design to be described in the NBRP.

The **mix of energy carriers and HVAC technologies** in the base year is another critical factor. Countries where natural gas, coal or oil dominate residential and non-residential heating face a fundamentally different transformation than countries where district heating, biomass or electricity already account for a significant share. It is important to note, however, that district heating is not inherently low-carbon – in many countries, district heating networks still rely on coal and gas with relatively low conversion efficiencies, meaning that the decarbonisation of the district heating supply itself must be part of the NBRP strategy. A high share of fossil fuels, as well as of direct electric resistance heaters and outdated, inefficient biomass stoves, means that the NBRP must address not only building envelope performance but also the replacement of heating systems. This process depends on supply chain readiness, installer capacity, and the availability of alternative energy infrastructure. It also affects the financial dimension: countries with high fossil fuel dependence will typically require larger investment volumes and more ambitious financial support programmes, coupled with possible regulatory approaches, to achieve the same level of decarbonisation and resilience.

Recent **renovation rates** differ substantially across the EU. Countries with higher deep renovation rates have demonstrated that their policy frameworks and construction sectors can deliver building improvements at scale. In contrast, countries with low renovation rates face structural barriers, such as limited access to finance, split incentives between landlords and tenants, or insufficient skilled labour, and NBRPs must ensure they include targeted measures and programmes to overcome these barriers. Lithuania offers a relevant example of identifying cost-effective renovation approaches described in the LTRS, including the use of trigger points, such as property transactions, to initiate renovation [1].

The broader energy system context, particularly the **primary energy factor (PEF) for electricity**, and, where relevant, for district heating, shapes how renovation targets translate into measurable, primary energy-related outcomes. The PEF reflects the carbon and energy intensity of a country's power grid. Where district heating plays a significant role, its PEF is equally relevant; however, the PEF for district heating varies locally depending on the fuel mix and conversion efficiency of the heat supply, and national-level values are often not available. In countries where district heating networks still rely on fossil fuels, the effective PEF for district heating can be high, reinforcing the need to address district heating decarbonisation within the NBRP.

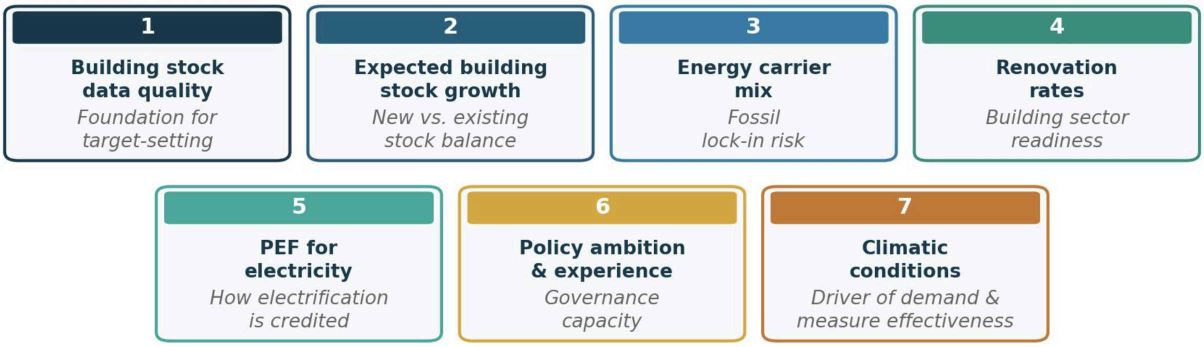
A country with a low PEF – indicating largely decarbonised electricity generation – will see a greater primary energy benefit from electrifying its heating supply through heat pumps in the short term. A country with a high PEF, typically one still reliant on coal or gas for power generation, will find that heat pump deployment alone delivers smaller primary energy reductions in the short term, making deeper building envelope renovations more critical. However, if a country with a high PEF covers a larger proportion of its heat demand with electricity, primary energy savings can be achieved by decarbonising the electricity supply, even without any direct building-related measures. Thus, the current level of PEF and expected development may shape, for example, the achievement of the Article 9 target, related policies, and the overall NBRP. The same renovation measure applied to the same building will produce different primary energy savings depending on the national PEF, and this must be reflected in the NBRP's modelling assumptions and target-setting.

The level of policy ambition and institutional experience with renovation planning varies across Member States. An assessment by the Joint Research Centre [7] found considerable variation in the quality of previous LTRS, with some countries developing detailed, evidence-based strategies, while others submitted documents that lacked quantified targets or clear implementation measures. Finland stands out as a positive example, with an LTRS that sets quantified renovation targets for 2030, 2040 and 2050, disaggregated by building type and renovation depth [1]. Spain demonstrates how renovation planning can be synchronised with broader climate and energy instruments [3]. Slovakia provides a model for structured public consultation in the strategy development process [1]. It would be logical to expect that the previous experiences of Member States with developing the LTRS, including the public participation process, will also affect the establishment of NBRPs.

Climatic conditions shape the energy demand profiles of buildings and influence the cost-effectiveness of different renovation measures. Countries with high heating degree days (HDDs) – such as northern European countries, Finland, Estonia, Lithuania, Sweden and Latvia – face greater space-heating energy demand, making building envelope improvements particularly cost-effective (the resulting reductions in useful and final energy demand across EU Member States are quantified in [3]). Many of these countries have already implemented more stringent building codes in the past, leaving less room for improvement. Countries in southern Europe with significant cooling demand – such as Italy, Croatia and Spain – face a different set of challenges, in which the interaction between building design, shading, ventilation and cooling systems becomes increasingly important, especially as climate change intensifies summer temperatures. The NBRP should account for both heating and cooling needs in its scenario modelling and renovation strategy.

These factors do not operate in isolation – they interact. A country with a high PEF, a high fossil fuel share, limited data infrastructure and low renovation rates faces a compounding set of challenges that requires a fundamentally different NBRP strategy to a country starting from a stronger position across all dimensions. Figure 1 provides an overview of these clustering dimensions and their relevance for NBRP design.

Figure 1: Dimensions of varying starting points of EU Member States when developing NBRPs



To structure these differences systematically, a hierarchical clustering analysis was applied to EU Member States based on six indicators: relative change in gross floor area (2020–2050), fossil fuels share (2020), HDDs (2016), PEF for electricity, deep renovation rate, and LTRS evaluation score (see [3] for the full methodology and results). These indicators were selected to capture the energy system configuration and building stock dynamics that most directly shape the renovation challenge. The analysis produced eight country clusters. The PEF for electricity and the fossil fuel share emerged as the two features that most distinguish the clusters, confirming that the energy system context is a dominant differentiator across Member States.

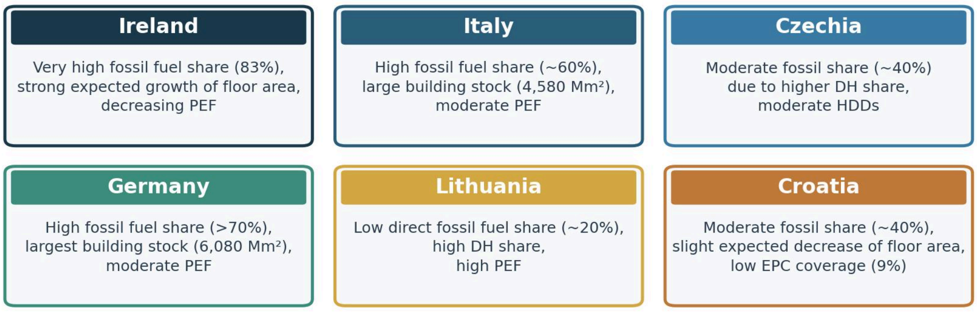
From these eight clusters, six exemplary countries were selected for detailed scenario analysis, representing five clusters. Since one cluster – comprising France, Germany, Poland, Romania, Hungary and Slovakia – is particularly large and diverse, two countries (Czechia and Germany) were chosen from this group. The six selected countries are Ireland, Italy, Czechia, Germany, Lithuania and Croatia. The selection was cross-checked against gross floor area, final energy demand, and share of renewable energy.

While we selected these exemplary countries, they should also be understood as representing types of similar countries or regions, as summarised in Figure 2.

- The results for Ireland shown below should be understood as representative for countries with a very high share of direct fossil fuel use (>80%) in the base year (2020), a strong expected growth of building stock, moderate HDDs, and moderate PEF of electricity.
- Italy stands for countries with a high direct use of fossil fuels share (~60%), but lower expected growth of floor area, low HDDs, and moderate PEF of electricity. The Italian LTRS was evaluated by JRC relatively positively, indicating good experiences with related processes of setting up such documents in the past [7]. Estimated historical deep renovation rates in Italy were higher than in other countries [16].
- Czechia represents countries with a moderate share of direct fossil fuels in the base year (~40%), due to a higher share of district heating and biomass, moderate to high HDDs, and a very high PEF of electricity.
- Germany illustrates a case with a high share of direct fossil fuel use (>70%) in the base year, moderate HDDs, and relatively high PEF of electricity.
- Lithuania stands for countries with a low share of direct fossil fuel use (~20%) in the base year due to a high share of district heating and biomass, high HDDs and moderate to low PEF of electricity, and a very good evaluation of LTRS, indicating a high level of expertise and experience with processes of setting up such types of reports.

- Croatia represents countries with a moderate share of fossil fuels (~40%), an expected slight decrease in building stock, and moderate to low HDDs as well as PEF of electricity.

Figure 2: Overview of the six exemplary countries and the types of EU Member States they represent



The scenario analysis presented in Section 5 illustrates how these different starting points translate into different renovation pathways and policy outcomes.

4

SCENARIO ANALYSIS AND RENOVATION ROADMAPS

This section presents the quantitative scenario analysis that underpins the renovation roadmaps. It describes the modelling framework and presents the results of the scenario analysis for the six representative countries selected from the clustering analysis and described in Chapter 3. The scenario framework builds on the one developed in the framework of the focus country analyses for Poland, Romania and Ukraine.

4.1 Scenario framework

The scenario analysis is built on the Invert building stock modelling framework, a bottom-up model that captures the energy demand and supply of the building stock, accounting for renovation decisions, technology choices and the evolution of energy carriers over time (see [2] and [3] for full model documentation). The scenarios are harmonised across countries and vary across four policy levers: the scope of MEPS, the presence or absence of a fossil boiler ban, the carbon price level, and the public support budget.

The five scenarios span a spectrum from strong regulatory intervention to a purely market-driven approach. At the most ambitious end, the Regulatory+ scenario combines MEPS for both sectors (residential and non-residential) with a fossil boiler ban, moderate subsidies and a CO_2 price of €75/t. The Regulatory scenario removes the boiler ban but retains MEPS in both sectors, testing whether standards alone suffice. The Mix scenario shifts the balance toward economic instruments, a high CO_2 price of €300/t and higher subsidies, while keeping MEPS only for non-residential buildings. The Moderate scenario further reduces ambition, with a lower carbon price and no residential MEPS. The Econ scenario relies entirely on a high carbon price and generous subsidies, with no mandatory performance standards in either sector. All scenarios assume that subsidies for building retrofitting are funded by revenues from ETS2, following the logic of the social climate fund.

The scenarios should not be understood as predictions but rather as illustrative pathways that help understand which policy combinations are most effective, the trade-offs between regulatory and economic instruments, and the pace at which fossil fuels can realistically be phased out. Different pathways could also trigger discussions during public consultations to decide on policy choices and their related impacts.

4.2 Modelled pathways for representative countries

The scenario framework was applied to all EU-27 Member States. The following presents a consolidated comparative analysis of the six representative countries, focusing on the transformation of the final energy demand mix and the evolution of heated gross floor area.

The six countries start from fundamentally different energy carrier compositions in 2020. Ireland and Germany are the most fossil-dependent, with fossil fuels (coal, oil, gas) accounting for 83% and 71% of final energy demand (FED), respectively. In Ireland, oil alone accounts for 18,100 GWh (45% of FED), followed by gas at 11,500 GWh (29%) and electricity at 3,700 GWh (9%), with only marginal shares of renewables and district heating. In Germany, gas dominates at 412,000 GWh (49% of FED), followed by oil at 181,000 GWh (21%), biomass at 100,500 GWh (12%), and district heating at 72,800 GWh (9%). Italy's mix is similarly gas-heavy at 214,000 GWh (55% of FED), but with a substantial biomass share of 58,400 GWh (15%). At the other end of the spectrum, Lithuania's direct use of fossil energy is only 20%, with district heating (43%) and biomass (28%) providing the bulk of the heating energy supply. Czechia (41% fossil) and Croatia (38% fossil) occupy intermediate positions, both with significant biomass shares.

Under the Regulatory+ scenario, all six countries undergo a profound transformation of their energy carrier mix by 2050. Shares of gases and oil drop to below 12% in every country: Ireland from 83% to 11%, Italy from 61% to 5% (the lowest), Germany from 71% to 12%, Czechia from 41% to 8%, Croatia from 38% to 10%, and Lithuania from 20% to 4%. The transition is driven primarily by the growth of ambient heat (reflecting heat pump deployment) and, in some countries, the expansion of district heating. In Italy, ambient heat grows from 20 TWh to over 143 TWh. In Germany, it rises from 9.5 TWh to over 162 TWh. Coal is virtually eliminated across all countries by 2035, while oil and gas decline more gradually.

The pace of transition differs significantly across scenarios. The most striking divergence appears in countries with high fossil dependence. In Germany, the Regulatory+ scenario produces a sharp step change in fossil fuel share between 2030 and 2035 (from 70% to 47%), driven by the fossil fuel boiler ban. Without it (Regulatory scenario), the fossil share remains at 64% by 2035 and 42% by 2050. This means that MEPS and economic instruments (see Econ scenario) are not sufficient to quickly phase out fossil fuels. Croatia shows an even starker pattern: under the Regulatory and Moderate scenarios, the fossil share remains essentially unchanged at 37–38% through 2050, while Regulatory+ brings it down to 10%. Ireland follows a similar trajectory, with the Moderate scenario leaving 29% fossil fuel use by 2050, compared to 11% under Regulatory+. In countries that start from lower fossil shares – Lithuania and Czechia – the scenario differences are narrower, as the energy system is already less dependent on fossil fuels and the transition is less disruptive.

To meet the target of a zero-emission building stock by 2050, particularly in countries with a moderate or high fossil fuel share in the base year and moderate to high HDDs, either the Regulatory+ scenario would need to be implemented, or high costs would be incurred in replacing gases and liquids with renewable gases and liquids.

The case of Italy shows that, for southern countries, it might be easier to shift to heat pumps due to the more favourable performance of air-source heat pumps and the higher benefits of reversible heat pumps for providing heating and cooling. The country-specific renovation depths and associated primary energy savings are discussed in detail in [3].

Under the Regulatory+ scenario, five of the six countries meet or exceed the EPBD Art 9 (2) target of a 16% reduction in specific primary energy demand by 2030. Italy leads with a 22% reduction, followed by Lithuania (21%), Germany (19%), and Czechia and Croatia (both 17%). Ireland falls just short at 15%. By 2035, all countries comfortably exceed the 20–22% milestone, with reductions ranging from 26% (Czechia) to 36% (Italy). By 2050, PED reductions range from 53% (Czechia) to 65% (Italy and Ireland). More detailed results are shown in *Replication of Article 9 to other EU Member States* [3].

Final Energy Demand by Energy Carrier (TWh/yr)

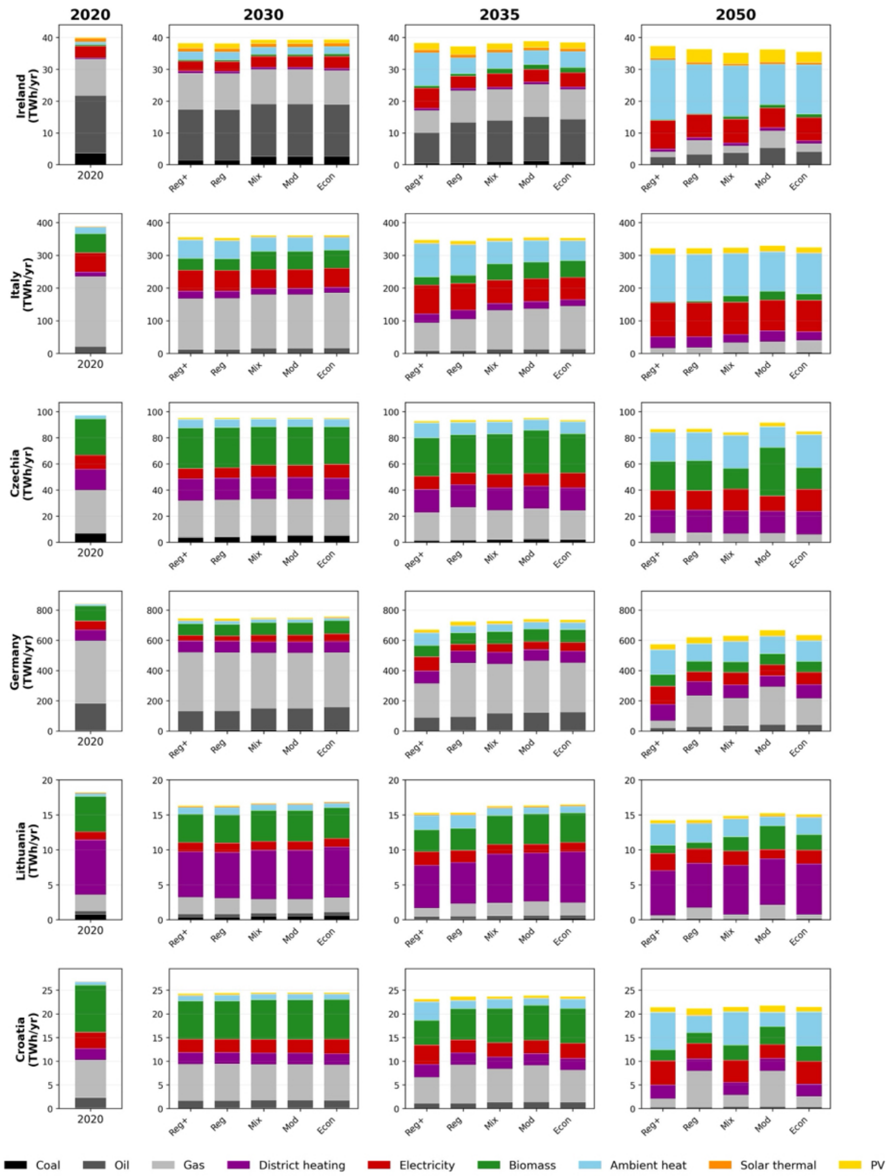


Figure 3: Final energy demand by energy carrier across six exemplary countries and five scenarios for 2020, 2030, 2035 and 2050 (TWh/yr). The 2020 column shows a single bar representing the base year energy mix; subsequent columns show results under five policy scenarios.

The evolution of heated gross floor area by energy carrier reveals a second dimension of the renovation challenge that varies significantly across countries. Ireland shows the strongest expected growth, with heated floor area increasing by 27% from 275 million m² in 2020 to 349 million m² by 2050 [17]. This reflects continued population growth and construction activity, meaning that a substantial share of Ireland's 2050 building stock will consist of post-2020 buildings that must comply with ZEB standards. Although this number is obviously subject to uncertainty, this case should serve as an illustrative example of such strong growth. Despite significant renovation activities, total final energy demand decreases only slightly, as part of the savings is offset by the rapidly growing stock of new buildings. The NBRP must therefore plan for both the renovation of existing buildings and the energy implications of new construction.

Germany and Italy, with the largest building stocks (6,080 and 4,580 million m² respectively), show broadly stable floor areas throughout the projection period. Czechia grows modestly from 594 to 640 million m². In these types of countries, the renovation challenge is overwhelmingly about transforming the existing stock rather than managing growth. Lithuania and Croatia, by contrast, show slight declines in heated floor area – Lithuania from 160 to 156 million m², Croatia from 206 to 194 million m² – reflecting demographic trends and limited new construction. In these types of countries, the NBRP can and should focus its policy instruments even more on the existing building stock.

The energy carrier breakdown of the heated floor area mirrors the transition of the final energy demand (Figure 1): gas- and oil-heated floor area shrinks dramatically under Regulatory+, replaced by electricity (heat pumps) and district heating. The trajectories of total gross floor area are broadly consistent across scenarios within each country, confirming that the policy instruments modelled, MEPS, carbon pricing, and subsidies, affect the energy performance and heating systems of buildings more than they affect the total volume of heated space. The exception is the Moderate scenario in some countries, which shows slightly different floor-area trajectories due to lower renovation activity, which affects the economic viability of maintaining certain building segments.

The share of biomass in most countries and scenarios declines under the assumptions made in our results. This is driven, on the one hand, by assumed biomass prices being triggered by a higher demand for biomass also in other sectors, such as industry, in order to achieve decarbonisation targets. Second, in those countries with a relevant share of district heating, we assume that a corresponding share would also be covered by biomass. This is not explicitly modelled and covered in the scope of this work. Finally, the modelling does not explicitly account for secondary heating systems, such as tiled stoves, which play a significant role in some Member States, particularly in rural areas. Thus, the results presented below might also underestimate the future share of biomass in space and water heating.

The results presented here show that district heating is only taking off significantly in Member States that already have a significant share in the base year. In the past, empirical evidence showed that, despite the stated potential of district heating in countries such as Spain and Ireland, uptake is very limited. Still, the potential exists, and it might be possible to overcome the barriers in the future. In this case, the uptake of district heating in some countries might be significantly higher than modelled under the assumptions made for this study.

Taken together, the FED mix and gross floor area results underscore that NBRP design must account for both the intensity of the energy transition (how much the carrier mix needs to change) and the scale of the building stock (how many square metres of floor area must be addressed). Countries like Germany face the challenge of transforming a very large stock with a high level of fossil dependence. Countries like Ireland face both transformation and growth. Countries like Lithuania face a more contained challenge but still need regulatory intervention to complete the phase-out of fossil fuels.

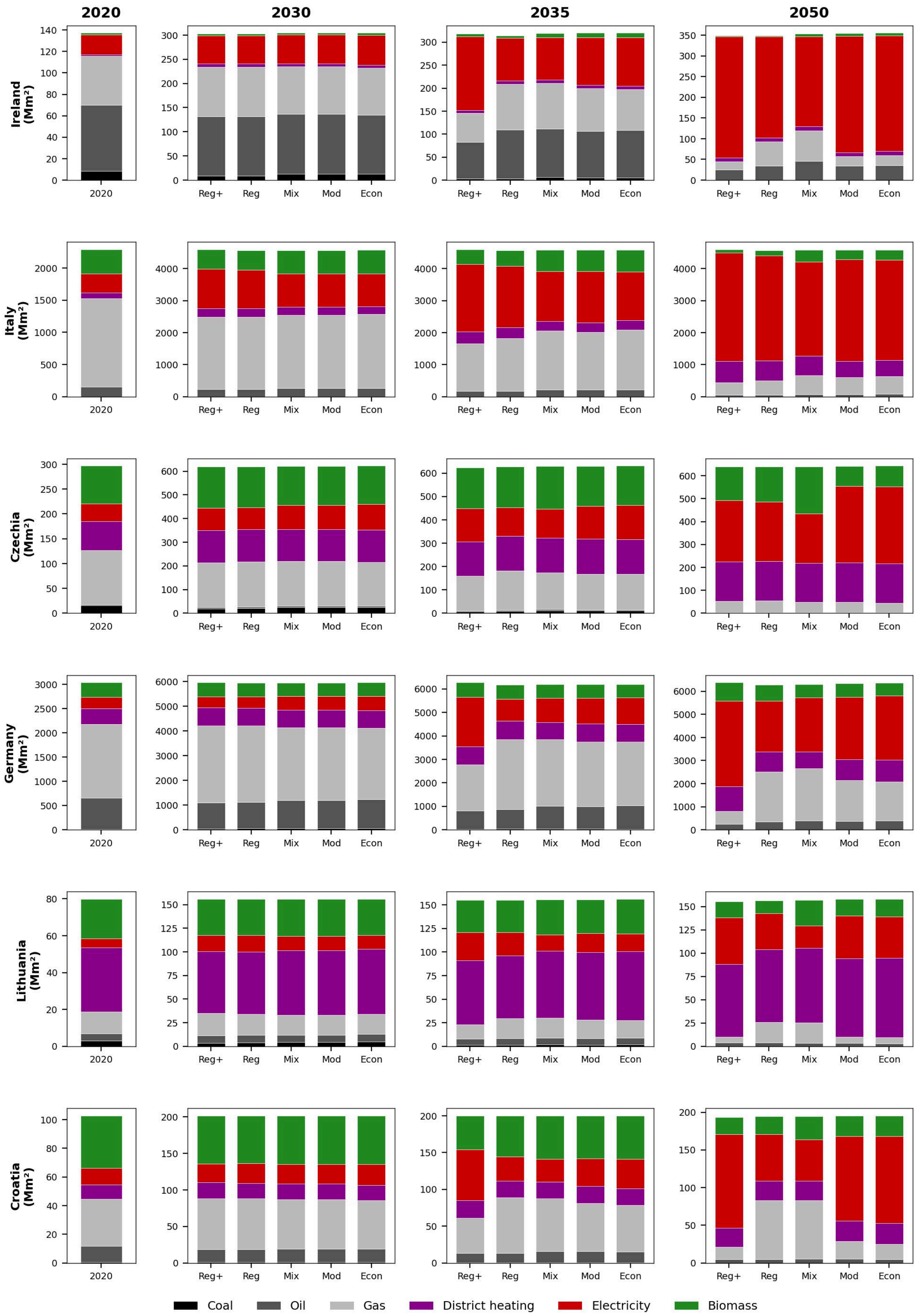


Figure 4: Heated gross floor area by energy carrier across all six countries and five scenarios (million m²)

5

RECOMMENDATIONS

The following recommendations draw on a series of works and publications elaborated in the frame of the EPBD.wise project: the policy needs identified in [1], the focus country experience from the Policy Guidelines Reports [2], the EU-wide scenario analysis in Summary of Policy Guidelines Reports [3], and the good practice examples identified across Europe (see [1] and [3] for detailed examples). They are organised around five themes: 1. building stock data; 2. building-related policy choices; 3. investment and financing; 4. scenario development, stakeholder dialogue, and governance; 5. synergies with other EPBD instruments; and 6. monitoring, evaluation, and continuous improvement. Obviously, these topics do not cover the full range of aspects and dimensions relevant to developing NBRPs. Rather, the topics were selected based on specific needs identified and addressed within the EPBD.wise project.

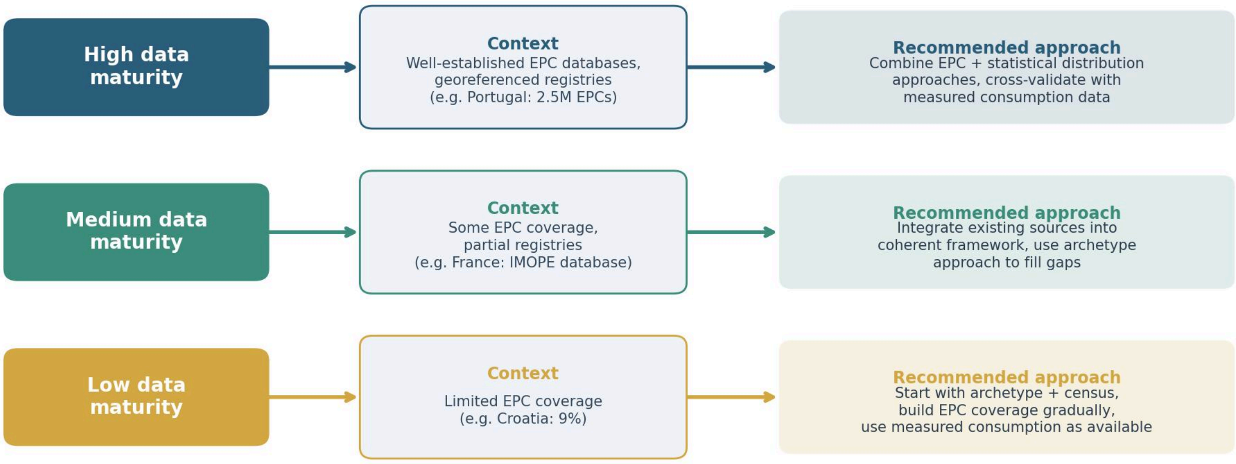
5.1 Building stock data: methods and trade-offs

The scenario analysis is built on the Invert building stock modelling framework, a bottom-up model that captures the energy demand and supply of the building stock, accounting for renovation decisions, technology choices and the evolution of energy carriers over time (see [2] and [3] for full model documentation). The scenarios are harmonised across countries and vary across four policy levers: the scope of MEPS, the presence or absence of a fossil boiler ban, the carbon price level, and the public support budget.

Building stock data was identified as the most critical policy need across all EPBD.wise focus countries. Without reliable data, it is not possible to identify worst-performing buildings, set meaningful targets, or evaluate whether policies are working. The NBRP template in Annex II of the EPBD requires an overview of the national building stock along two dimensions: conditioned floor area and primary (or final) energy use per floor area, for both residential and non-residential buildings. The resulting distribution curve is needed to derive the 43% share of worst-performing buildings and the 16th and 26th percentile thresholds for non-residential MEPS.

We identified four main approaches to compiling this data, each with distinct strengths and limitations: 1. the archetype-based approach, 2. the measured energy consumption approach, 3. the EPC-based approach, and 4. the statistical distribution-based approach. Figure 5 illustrates which combination of approaches is recommended depending on a country's level of data maturity.

Figure 5: Exemplary recommendations for building stock data approaches by level of data maturity



The **archetype-based approach** uses reference buildings defined by construction period, building type and geometry, with energy needs calculated from thermal properties (U-values) and installed heating technology. This approach can build on reliable sources such as the EU Building Stock Observatory (BSO) or the Tabula/Episcope typologies. Still, essential data elements are often missing – particularly the share of previously renovated buildings and the split of heating systems across building segments. A key limitation is that the archetype approach may underestimate the variance of the actual energy performance distribution if MEPS thresholds are set using archetype-based distributions. At the same time, if compliance is assessed using measured consumption, it could mean that not 16% but a much higher share of non-residential buildings would need to be renovated – a deviation that should be avoided.

The **measured energy consumption approach** benefits from capturing actual building usage, refurbishment status, and climatic conditions. Where the building stock is heated primarily by gas or district heating, consumption data can often be obtained from a few grid operators. However, the approach has limitations when electricity, heating oil or biomass are used, or when data protection regulations constrain access.

Energy performance certificate databases provide standardised data based on established methodologies, but suffer from two common problems: the total primary energy use reported by EPCs is generally inconsistent with energy balance statistics, and the samples often exhibit a bias toward refurbished and new buildings. In one exemplary city analysed, EPCs were available for only 12–15% of buildings, with an overrepresentation of recently renovated properties.

The **statistical distribution-based approach**, as applied in the Austrian NBRP, uses energy consumption data from energy balances combined with a standard statistical distribution assumption calibrated against building codes. This provides a pragmatic method when other data is scarce.

Given the strengths and limitations of each approach, Member States should combine **multiple data sources and methods** to cross-validate results and build a robust picture of their building stock. The choice of approach should be made transparently, and its implications for MEPS threshold-setting should be assessed explicitly.

The appropriate strategy depends on a country's data infrastructure. Countries with well-established EPC databases and high coverage rates – such as Portugal, which maintains more than 2.5 million certificates with approximately 300 variables per building – can use EPC data as the primary source for constructing the distribution curve, cross-validated against energy balance statistics to correct for any sampling bias. The priority for these countries is to ensure consistency between EPC-based distributions and measured consumption data, and to extend coverage to segments of the stock that remain underrepresented.

Countries with limited EPC coverage – such as Croatia, where only 9% of buildings hold an EPC – cannot rely on EPC databases as the primary source. These countries should start with the archetype-based approach using BSO and national typology data, supplemented by measured consumption data from energy utilities where available. The immediate priority is to expand EPC coverage systematically while using the archetype-based distribution as an interim basis for setting MEPS thresholds, with explicit acknowledgment of the risk of underestimating variance described above.

Countries at a medium level of data maturity should focus on integrating their existing sources into a coherent framework. France's IMOPE database offers a model: it integrates more than 100 data sources at the address level across 21 million addresses, covering technical, energy, social and urban dimensions of the building stock. While building such an integrated platform requires sustained investment, it transforms fragmented data into a planning tool that can support not only NBRP development but also targeted renovation programmes, energy poverty mapping, local energy planning, and monitoring.

In all cases, special attention is needed for the non-residential sector, where data availability is typically weaker than for residential buildings. The commercial, public and industrial building segments often lack the standardised typologies available for housing, making the identification of worst-performing non-residential buildings particularly challenging.

With this data foundation in place, the next question is how the building stock responds to different policy interventions and under which conditions certain policies are needed. The following section addresses this through quantitative scenario modelling.

5.2 Building-related policy choices

The scenario results reveal that the effectiveness of different policy instruments depends heavily on a country's starting conditions, and that three characteristics shape the policy response most strongly: the share of energy carriers in the base year, the expected trajectory of the building stock, and the primary energy factor for electricity. Figure 6 maps the recommended policy emphasis along two of these key dimensions.

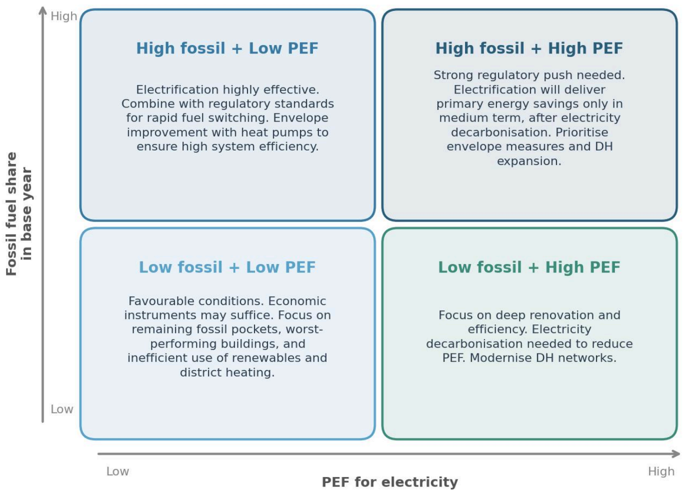


Figure 6: Policy emphasis by fossil fuel share and primary energy factor for electricity

Countries with a high share of fossil fuels in their base-year heating mix, such as Ireland (83%), Germany (71%) and Italy (61%), require the most ambitious policy packages combining MEPS with a fossil-fuel boiler ban. The results show that without these instruments, fossil fuel shares can remain at 30–50% by 2050, even with a high carbon price of €300/t. In Germany, the Regulatory scenario (MEPS but no boiler ban) leaves the fossil share at 42% by 2050, compared to 12% under Regulatory+.

In Croatia, the Regulatory and Moderate scenarios leave the fossil share essentially unchanged at 37–38% by 2050. For these countries, the NBRP should prioritise a clear, preannounced fossil fuel phase-out timeline, combined with MEPS and targeted financial support. Countries with a lower fossil fuel share, such as Lithuania (20%) and Czechia (41%), face a less dramatic but still significant transformation. Lithuania's energy system is already dominated by district heating and biomass, which means the policy challenge is less about replacing fossil heating systems and more about improving building envelopes and modernising district heating networks; the envelope-related savings potential for different country clusters is analysed in [3]. Czechia's diversified mix, with substantial biomass, district heating and gas, allows for a more gradual transition across multiple energy carriers. For these countries, the NBRP can afford to rely more on economic instruments alongside MEPS, as the Mix and Econ scenarios perform closer to Regulatory+ than they do in high-fossil countries.

The expected growth or contraction of the building stock also has important policy implications. Ireland's heated gross floor area grows by 27% between 2020 and 2050 (from 275 to 349 million m^2), driven by population growth and new construction. This means that a significant share of Ireland's building stock in 2050 will consist of buildings constructed after 2020, which must comply with the ZEB standard. The NBRP should therefore address not only the renovation of existing buildings but also the integration of new construction into the overall energy demand projections. By contrast, Lithuania and Croatia show slight declines in gross floor area (from 160 to 156 million m^2 and from 206 to 194 million m^2, respectively), suggesting stable or declining populations and limited new construction. In these countries, the renovation challenge is focused entirely on the existing stock, allowing the NBRP to focus its policy instruments accordingly. Germany and Italy show broadly stable floor areas, meaning the policy challenge is overwhelmingly about transforming what already exists.

The primary energy factor for electricity determines how much credit a country receives, in primary energy terms, for switching from fossil heating to electricity-based systems such as heat pumps. A country with a low PEF (indicating a clean electricity grid) will see larger primary energy reductions from electrification. This is reflected in the scenario results: countries where the PEF is assumed to decline over time show faster apparent progress toward the Article 9 targets. However, this can be misleading. A declining PEF makes it possible to meet primary energy targets partly through grid decarbonisation rather than actual building improvements. The NBRP should therefore present scenarios under both constant and declining PEF assumptions, and the policy conclusions should be drawn from the constant PEF results to ensure that genuine building-level improvements are driving target achievement.

Renovation policies must also be designed with social fairness in mind. The EPBD requires NBRPs to include measures to address energy poverty and protect vulnerable households. Financial support should be targeted to those who need it most, and the distributional impacts of MEPS and carbon pricing should be assessed explicitly.

5.3 Investment and financing

The NBRP template requires an outline of investment needs, financing sources and administrative resources. The scenario results illustrate the scale of the challenge. Under the Regulatory+ scenario, the six representative countries must collectively replace the heating systems of buildings currently consuming hundreds of thousands of GWh of fossil fuels annually, while simultaneously improving building envelopes. The investment required to achieve this transformation varies substantially by starting point; countries with higher fossil fuel dependence in the final energy demand mix and potentially outdated biomass-based heating systems face correspondingly larger investment needs.

Member States should develop national financing roadmaps that integrate EU funds, national instruments and private capital. Financial incentives should reward deep renovations over shallow measures, [3] country-level evidence should be provided on the energy savings achievable through deeper renovation of the building envelope, and targeted support should be provided for vulnerable households and small landlords who face the highest barriers to renovation. The analysis in [2] recommended linking MEPS enforcement with preferential financing to ensure that regulatory requirements do not create disproportionate burdens. Mechanisms for mobilising private investment – such as energy service company (ESCO) models, on-bill repayment schemes, and green mortgages – should complement public funding programmes.

The scenario analysis suggests that across all countries, and particularly in those with currently high fossil fuel shares, strong regulatory measures would be needed. Only under specific conditions, in particular with a low or moderate share of direct use of fossil fuels, might economic incentives lead to a similar result as a strong combined policy framework (see the cases of Croatia and Czechia). Still, each regulatory policy package needs strong economic backing to ensure acceptability and support of vulnerable groups. Our results show that social climate funds, being funded by ETS2 revenues, can serve as an effective route to finance related subsidy programmes.

5.4 Scenario development, stakeholder dialogue and governance

The way in which an NBRP is elaborated is as important as its content. In each EPBD.wise focus country, the policy guidelines were developed through a combination of quantitative modelling, structured stakeholder dialogues and iterative feedback, revealing insights that modelling alone could not capture.

Based on this experience, EPBD.wise recommends that Member States should develop multiple scenarios rather than presenting a single pathway. The five-scenario framework used in EPBD.wise, which varies across regulatory stringency, carbon pricing and subsidy levels, proved effective at making trade-offs between policy instruments visible and debatable. Presenting a single preferred pathway, by contrast, forecloses the discussion and reduces stakeholder engagement to endorsement rather than genuine input.

Member States should therefore publish their scenario assumptions transparently, explain the rationale for the chosen policy levers, and provide stakeholders with the opportunity to assess alternative assumptions before the NBRP is finalised.

The quality and depth of stakeholder engagement in renovation planning vary widely across the EU. The JRC assessment [7] found that some Member States conducted structured consultation processes that shaped both the analytical framework and the policy conclusions of their strategies, while others treated stakeholder engagement as a formal compliance requirement with limited influence on the final document.

The EPBD.wise stakeholder roundtables confirmed this pattern: national experts from several countries reported that previous LTRS processes had often been top-down, with limited opportunity for building owners, industry representatives or civil society to scrutinise the scenario assumptions or challenge the proposed policy measures [3].

Countries with strong traditions of public engagement can build on their existing institutional frameworks. Finland provides the most relevant model: its LTRS, rated highest among all EU strategies by the JRC for its milestone-based roadmap, was developed through scenario modelling which was subsequently validated through structured stakeholder consultations. The renovation targets for 2030, 2040 and 2050 were disaggregated by building type and renovation depth, and the underlying assumptions were made explicit and open to scrutiny. Spain demonstrates a complementary approach, where the LTRS was designed as a direct complement to the National Energy and Climate Plan, with a detailed matrix of progress indicators developed through cross-sectoral coordination [3]. Slovakia's experience with structured public consultations, identified as a good practice in [1], offers a concrete model for organising this engagement even in countries without a strong prior tradition.

Effective cross-ministerial coordination is critical. Responsibility for building energy efficiency is typically distributed across multiple ministries and agencies. The analysis in *Development of NBRP Policy Guidelines for Poland, Romania, and Ukraine* recommended establishing inter-ministerial working groups, data governance platforms, funding coordination committees and stakeholder advisory councils to ensure coherent NBRP delivery [2]. The successful implementation of NBRPs also depends on broad societal support. The analysis in *Development of NBRP Policy Guidelines for Poland, Romania, and Ukraine* recommended establishing a permanent Stakeholder Advisory Council with biannual consultations involving industry, housing associations, local governments and civil society, ensuring that engagement continues throughout the NBRP implementation and evaluation cycle [2]. Civil society organisations, consumer associations and tenant unions are particularly important for ensuring that the energy transition is perceived as fair and inclusive.

Many Member States' responsible administrative units currently lack the modelling expertise and institutional capacity to develop evidence-based scenarios. The EPBD.wise approach, combining a shared modelling framework with national data and stakeholder input, offers a replicable template. Investing in capacity-building through partnerships with research institutions and peer learning is essential.

5.5 Synergies with other EPBD instruments

The NBRP does not exist in isolation. Rather, the NBRP serves as an umbrella for a series of policy instruments, analyses, data, and provisions foreseen in the EPBD. In the context of the EPBD.wise project, we focused on the synergies between NBRPs and the following elements: 1. Definition of ZEB requirements, 2. EPCs, 3. Renovation Passports, 4. MEPS in non-residential buildings, and 5. Trajectories of progressive building renovation in residential buildings. The analysis in [2] for Poland, Romania and Ukraine, and discussions with policymakers and stakeholders across the EU, confirmed these interactions between the NBRP and other EPBD instruments and identified the following points where coherence is essential (Figure 7).

The NBRP as umbrella instrument connecting key EPBD policy elements

ZEB DEFINITION
Strategic benchmark

The ZEB definition serves as a strategic benchmark. NBRPs need to document the ZEB definition and mention the related thresholds. In addition, the ZEB definition is meant to set the overall target to be achieved for the whole building stock in the mid to long term. Thus, the strategic roadmaps to be developed in NBRPs need to ensure the gradual move of the building stock towards ZEB standards. Also, NBRPs should serve as an instrument for periodical monitoring of this transition.

EPCS
Monitoring & signalling

EPCs are a monitoring and signalling instrument for building owners and occupants. NBRPs need to document the status of EPCs in Member States. However, in addition, EPCs also have the potential to serve as a data foundation for developing the renovation roadmaps. If EPC data is available and representative of the building stock, EPCs can also facilitate the identification of worst-performing buildings and facilitate the tracking and monitoring of renovation. Both are essential for developing sound NBRPs and renovation roadmaps that are also in line with Article 9.

RENOVATION PASSPORT
Building-level execution plan

Renovation Passports form the execution plan for moving towards ZEBs at building level. NBRPs need to describe policies for deep renovation, which can also be in the form of staged renovation. These policies need to be consistent with the framework of Renovation Passports, and they should support the implementation of measures to be developed on an individual building level in Renovation Passports. This means that the policies designed and documented in NBRPs need to support staged renovation in a way that ensures ZEB standards in the long run.

NBRP

MEPS (ARTICLE 9 (1))
Regulatory ladder for non-residential

MEPS (Article 9 (1)) are the regulatory delivery ladder for non-residential buildings (and could also be implemented for residential buildings, if a Member State decides to do so). On the one hand, NBRPs need to document the thresholds to be met by 2030 and 2033 (and beyond). On the other hand, MEPS are a key policy instrument affecting the renovation roadmap. NBRPs have to clarify the synergies between MEPS and other complementary policies such as subsidy programmes, but also advise measures and Renovation Passports. In the medium term, NBRPs will also need to monitor progress towards achieving MEPS thresholds.

ART 9 (2) TRAJECTORIES
Dynamic target framework for residential

Trajectories for progressive building renovation (Article 9 (2)) are the dynamic target framework to be established for residential buildings. While the targets are clearly defined in the EPBD, NBRPs need to design and describe policies suited to achieving this dynamic target framework. Having said that, the renovation roadmaps need to be consistent with the targets of the trajectories and be coherent with the described policy framework. Last but not least, in the medium term, NBRPs will serve as a monitoring instrument to track progress towards the defined trajectories.

Figure 7: The NBRP as umbrella instrument connecting key EPBD policy elements

The national trajectory for residential building renovation (Article 9(2)) and the MEPS for non-residential buildings (Article 9 (1)) must be fully integrated into the NBRP, derived from the same analytical framework. EPCs are both a key data source and a policy instrument; strengthening the EPC framework – including quality assurance, coverage and public accessibility – directly supports the NBRP. However, EPC databases often suffer from coverage bias and inconsistency with energy balance statistics.

5.6 Monitoring, evaluation, and continuous improvement

NBRPs serve a dual function: they are both strategic planning instruments and frameworks for monitoring, reporting and evaluation. Article 3 of the EPBD requires NBRPs to include measurable progress indicators and to be updated every five years based on implementation experience.

The analysis in [2] evaluated key data sources for monitoring renovation activity across three criteria: effort, reliability and completeness. Continuous tracking of EPC databases and building logbooks provides real-time standardised data but requires strong infrastructure. Documentation from financial support programmes – such as France's Observatoire national de la rénovation énergétique or the Dutch SHAERE database for social housing – is highly reliable but only captures subsidised renovations. Building permits track major works but miss most energy efficiency measures. Surveys among professionals offer technical accuracy but depend on sample size. Machine learning-based assessments enable scalable monitoring but require high-quality input data.

No single data source provides comprehensive coverage. A combination of multiple complementary sources is needed. Monitoring should distinguish between shallow, moderate and deep renovations; the renovation rate alone does not capture whether renovations achieve meaningful energy savings. Monitoring results should feed back into policy design through regular evaluation cycles.

6

SYNTHESIS AND OUTLOOK

The analysis presented in this report builds on previous EPBD.wise project results – i.e. the policy needs assessment [1], focus country guidelines [2], and EU-27 scenario analysis [3] – and leads to several overarching conclusions.

NBRPs are the central planning tool for achieving the EU's building decarbonisation goals. There is no single blueprint for a good NBRP: the clustering analysis shows that Member States form a continuum of starting points shaped primarily by the carbon-intensity of their electricity generation and the composition of their heating energy mix. The scenario results for the six representative countries illustrate this concretely. Countries such as Ireland and Germany face the steepest transformation challenges, requiring the wholesale replacement of oil and gas heating systems. Other countries, such as Czechia and Croatia, start from more moderate positions but differ in their responsiveness to policy – Croatia's fossil share barely moves without a boiler ban. At the same time, Czechia's diversified energy mix enables a smoother transition. Countries such as Lithuania start from the strongest position, with district heating and biomass already providing the bulk of heating energy.

The scenario analysis consistently demonstrates that ambitious regulatory measures are necessary. Across all six countries, the Regulatory+ scenario, combining MEPS in both sectors with a fossil boiler ban, delivers the deepest fossil fuel phase-out and the largest reductions in primary energy demand. The fossil boiler ban proves decisive in countries with high gas and oil dependence, producing a step change in the energy carrier mix between 2030 and 2035 that no other policy instrument can achieve. Without it, countries like Germany, Croatia and Ireland risk entering 2050 with fossil fuel shares of 29–49%, requiring the substitution of large volumes of liquids and gases with highly expensive renewable alternatives.

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The Regulatory+ scenario shows that with a mix of renovation measures on the building envelope, combined with a stringent roll-out of heat pumps and district heating, Member States can achieve the transition towards ZEBs in a much more effective way. The Member-State-level analysis of these building envelope measures and the resulting primary energy savings is provided in [3].

Reliable building stock data is a prerequisite for credible target-setting, and Member States should combine multiple data compilation approaches while being transparent about the implications of their methodological choices. Policy coherence across NBRPs, Article 9, EPCs, Renovation Passports and ZEB definitions is essential; these instruments must reinforce rather than contradict each other.

As Member States were supposed to submit their first draft NBRPs by the end of 2025, the initial plans vary in analytical depth and policy ambition. The EPBD.wise project aims to support Member States in progressively strengthening their NBRPs over successive update cycles. The modelling framework and scenario methodology developed in this project are designed to be replicable: any Member State can apply an approach for developing renovation roadmaps as described in this report.

According to the advice and feedback from the European Commission on the first draft NBRPs, Member States have the opportunity to revise and strengthen their plans before the final submission by the end of 2026. The evidence presented in this deliverable, particularly the finding that the fossil boiler ban and residential MEPS are indispensable for meeting the 2030 and 2035 milestones, should inform these revisions. The evidence presented in this deliverable, such as the finding that discussing several scenarios can substantiate public discussion and that the fossil boiler ban and the implementation of residential MEPS are key instruments for meeting the 2030 and 2035 milestones, may inform these revisions.

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