

MINIMUM STANDARDS MAXIMUM IMPACT

HOW TO DESIGN FAIR AND EFFECTIVE
MINIMUM ENERGY PERFORMANCE STANDARDS
FOR BUILDINGS IN EUROPE



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BPIE (Buildings Performance Institute Europe) is a leading independent think tank on energy performance of buildings. Our vision is a climate-neutral built environment, aligned with the ambition of the Paris Agreement, and in support of a fair and sustainable society. We provide data-driven and actionable policy analysis, advice, and implementation support to decision-makers in Europe and globally. www.bpie.eu

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INTRODUCTION

Europe must urgently accelerate the renovation and full decarbonisation of its building stock. According to the European Commission, the current annual 1% renovation rate should double by 2030, while BPIE's own analysis concludes that annual deep renovation rates need to reach at least 3% in order to meet the EU's 2030 climate and energy goals.

BPIE's EU Buildings Climate Tracker shows that the European Union is not on track to achieve its climate targets in the building sector. Lack of action, delays or weaknesses in implementing effective building decarbonisation policies at the European level are no longer acceptable considering the need to dramatically increase the EU's energy security. To meet the 2030 and 2050 climate targets in the building sector, deep renovation activity needs to step up significantly this decade.



A policy instrument that effectively accelerates deep energy renovation while being fair to all citizens is urgently needed. Well-designed minimum energy performance standards (MEPS) can meet these requirements and put the building stock on track to meet climate targets.

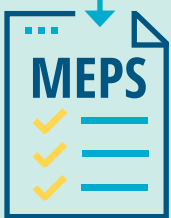


EMBEDDED IN A SUPPORTIVE FRAMEWORK, MEPS WILL:



- ✓ **Ensure affordability** of renovation and fair access to renovation support
- ✓ **Create demand** for energy renovation services
- ✓ **Deliver multiple benefits to occupants** such as improved health and well-being
- ✓ **Reduce energy demand** and thus energy costs for consumers
- ✓ **Trigger innovation** in the construction sector
- ✓ **Encourage investments** and new financing instruments
- ✓ **Stimulate continuous education** and training to improve skills in the construction sector.

WHAT ARE MINIMUM ENERGY PERFORMANCE STANDARDS (MEPS) FOR EXISTING BUILDINGS?



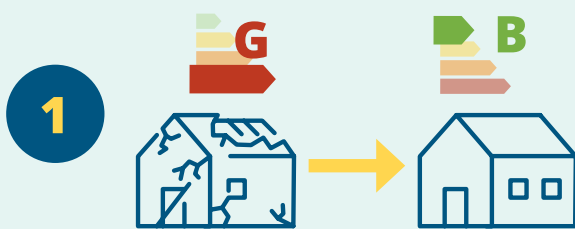
A regulation that mandates certain existing buildings within a defined territory to meet a certain performance standard, by a specified compliance date or according to natural trigger points in the building's lifecycle (e.g. time of sale). The requirement can apply to all buildings or particular building segments. The underlying metrics of the requirement are typically based on energy performance standards (kWh/m²/year), often based on the rating in the building's energy performance certificate (EPC), but can also incorporate broader aspects (e.g. climate performance standards (CO₂/m²/year), whole-life carbon, and wider environmental, social and governance factors).

Source: based on DG ENER, 2021

FIVE DESIGN PRINCIPLES

FOR FAIR AND EFFECTIVE MEPS SCHEMES

To generate the desired benefits, the design of MEPS should:



Address the **WORST-PERFORMING BUILDINGS FIRST** so that people see an immediate and meaningful impact.



Be aligned with the **OWNER'S ABILITY TO INVEST.**



MAKE REQUIREMENTS BINDING AND FORESEEABLE to accelerate innovation in the energy renovation supply chain.



Have an **EFFECTIVE COMPLIANCE SUPPORT AND ENFORCEMENT SYSTEM.**



DEFINE regular and frequent **MILESTONES.**

WHILE DIFFERENT BUILDING SEGMENTS ARE ALL IMPORTANT, THEY REQUIRE DIFFERENTIATED APPROACHES. WE PROPOSE TWO MEPS DESIGNS:



Crucially, in order to be effective, accessible and affordable, any MEPS scheme put into place must be implemented within a **comprehensive ecosystem of supporting policy instruments tailored to the needs** of the different target groups.

A

MEPS system A is designed for larger non-residential buildings (>1000m²), public buildings, and multi-family buildings with a single owner. It applies progressive thresholds and cut-off dates that are consistent with the path to fully decarbonise the building stock in the EU by 2050.

B

MEPS system B is designed for smaller non-residential buildings (<1000m²), residential multi-family buildings with multiple owners, and single-family buildings. It is linked to the implementation of renovation measures according to a mandatory long-term renovation passport and individual milestones for the building.





RENOVATING THE WORST-PERFORMING BUILDINGS FIRST REDUCES ENERGY CONSUMPTION QUICKLY WITH VULNERABLE GROUPS BENEFITING AS A PRIORITY.

Worst-performing buildings are those that have the highest final energy consumption (in kWh/m²/year) of the national building stock. The figure below gives an overview of the final energy consumption of the worst-performing 15% residential buildings in floor area in each member state, illustrating the high amount of energy used for space heating and hot water per square metre per year.

Figure 1: Overview of worst-performing 15% of residential buildings based on the floor area in EU Member States sorted by climatic zones. Source: Statistical data from EPCs; Hotmaps 2020

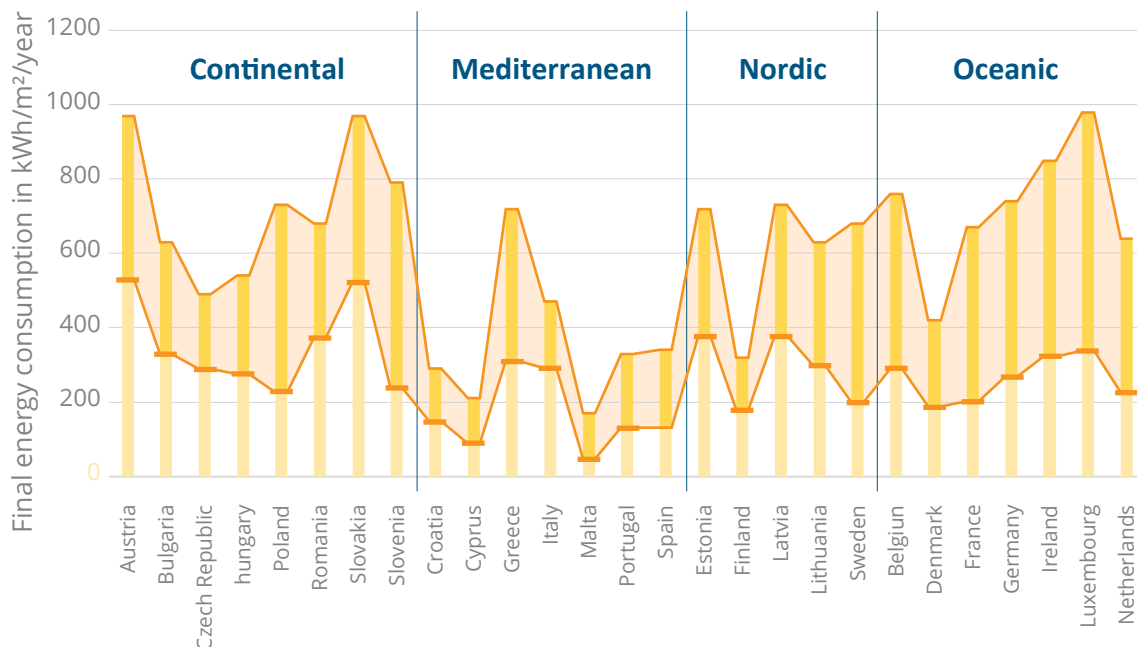


Figure 1 shows that renovating the worst-performing 15% of the building stock by floor area would significantly reduce wasteful energy consumption. The worst performing 15% of the floor area is highlighted by the orange area. The orange bar marks the final energy consumption that corresponds in each Member State with the 15% WPB threshold. Tapping this potential is crucial to bring the building sector on track to meet EU climate targets. While Figure 1 shows that reducing the energy consumption of the worst performing buildings is an obvious choice, the final energy consumption remains high – in many cases well above 200 kWh/m²/year. To meet climate targets, at least half of the worst performing floor area needs to be included in a MEPS scheme to ensure the entire building stock reaches target levels by 2050.

There is another reason to address the worst-performing buildings first. These buildings are often occupied by the most vulnerable groups in society, who should benefit as a priority from structural measures to alleviate growing energy poverty as quickly as possible.

MEPS should address building segments that have the highest energy and CO₂ saving potential, even if these may be difficult to access.



The worst-performing buildings are often occupied by the most vulnerable groups in society, who should benefit as a priority from structural measures to alleviate growing energy poverty as quickly as possible





**BUILDING OWNERS NEED TO
HAVE THE FINANCIAL CAPACITY
AND/OR ACCESS TO FINANCIAL
SUPPORT SCHEMES TO INVEST IN
DEEP RENOVATION.**

Ownership patterns in real estate markets vary significantly for different building types and between Member States, which leads to differentiated investment abilities. In larger residential buildings, heterogenous ownership often inhibits investment decisions for deep renovation. In non-residential buildings, different usage types may result in varying investment cycles.

To be effective, MEPS schemes need to be embedded in an ecosystem of financial support, especially for vulnerable groups. MEPS design should therefore consider ownership structures, the building type, and the related ability to invest in energy renovation. This will allow renovation demand to be met by the supply of well-tailored energy renovation services.

The opportunity to invest also depends on the availability of a qualified workforce, sufficient supplies of materials and equipment, and independent guidance on how to undertake works (e.g., through one-stop-shops and/or building renovation passports). A dynamic roll-out of energy renovation activities supported by MEPS needs to be supported by innovation and upskilling in the construction sector. In fact, MEPS can create positive momentum and accelerate the cycle of innovation in renovation and construction.



**BINDING REQUIREMENTS WILL
DRIVE INNOVATION IN THE
CONSTRUCTION SECTOR AND
PROVIDE CERTAINTY TO ALL
ACTORS ACROSS THE VALUE CHAIN.**

The construction sector is one of the least innovative economic sectors in the EU. Incumbent institutions and organisations dominate the market. They focus on constructing new buildings, and are not able to tackle the ongoing challenges of building energy renovation. Established actors tend to rely on existing technologies and established ways of working. There is little incentive for small actors to invest in training when the return on investment is uncertain.

With the sector lacking the qualified workforce and coordination needed to accelerate comprehensive, high-quality renovation approaches, game-changers are needed to innovate and optimise energy renovation processes. The right incentives can enable a new economic sector for energy renovation to emerge within the construction ecosystem.

Standards and binding requirements are key to drive industries to innovate. There are many examples where setting standards has triggered innovation and provided competitive advantages to pioneers, especially in relation to energy and resource efficiency.¹ Sharing the same objective fosters change and innovation as organisations and people within a sector work towards the same clearly defined goal.

Setting ambitious, timebound requirements for all building segments at the EU level will allow all Member States and European market players to benefit from this innovation dynamic. Clear requirements provide certainty to all actors in the value chain to properly allocate resources and expand or change their business model. Milestones embedded in the design of MEPS schemes will also help align demand for energy renovation with renovation services provided by the construction sector. Milestones will support the achievement of innovation objectives and create investment certainty for structural changes in the sector. Finally, they can serve as benchmarking opportunities to monitor the impact of MEPS.

¹ SRU (2016) Vorreiterpolitik für eine ökologische Transformation. https://www.umweltrat.de/SharedDocs/Downloads/DE/01_Umweltgutachten/2016_2020/2016_Umweltgutachten_Kap_01.pdf; Cleffs, T. and Rennings, K. (2012) Are there any first mover advantages for pioneering firms? Lead market-oriented business strategies for environmental innovation. *European Journal of Innovation Management* 15 (4): 491–513; Quitzow, R. et al. (2014) The concept of “lead markets” revisited: Contribution to environmental innovation theory. *Environmental Innovation and Societal Transitions* 10: 4–19.



SPECIFIC TARGET GROUPS SHOULD RECEIVE SUPPORT TO ENABLE THEM TO COMPLY WITH MEPS. THIS SHOULD BE COMPLEMENTED WITH EFFECTIVE ENFORCEMENT SCHEMES.

Compliance with existing regulation in the buildings and construction sector is essential for many reasons. A comprehensive evaluation of the UK Minimum Energy Efficiency Standard scheme shows that the mandatory character and expected sanctions for non-compliance led to high levels of compliance.² Compliance also depends on awareness: the UK evaluation showed that the main sources of information about the Minimum Energy Efficiency Standard were professional landlord organisations, market actors such as letting agents and EPC assessors, and media. Owners with small portfolios are less likely to be part of professional housing market networks, so their awareness of MEPS should not be seen as a given. Local authorities have an important role to play in providing information.

MEPS can only be socially fair and effective if a support infrastructure is put in place, including advisory and financial support. Mandatory building renovation passports would help inform investors and owners about the right steps in renovation and avoid decisions which would create stranded assets. A well-organised network of one-stop-shops would enable owners and investors to take the necessary decisions to comply with MEPS.

Investments by governments and public institutions are crucial to nurture the needed innovation, allow for learning by failure and protect new market entrants.³ Nurturing innovation in the building sector is all the more important to meet the energy renovation demand that the introduction of MEPS will trigger. Well-tailored support schemes addressing both the supply and the demand side can help steer energy renovation activity over time. Public money should be used widely and prioritise vulnerable groups.

² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/922799/prs-mees-interim-report.pdf

³ Mazzucato, M. (2015) The green entrepreneurial state. In: Scoones, I., Leach, M., Newell, P. (Eds.) *The Politics of Green Transformations*. Abingdon, New York, NY: Routledge, pp.134–152.



**MEPS NEED TO
BE CONSISTENT
WITH LONG-TERM
DECARBONISATION
TARGETS.**

To meet the 2030 and 2050 climate targets in the building sector, deep renovation activity needs to ramp up this decade. Designing MEPS schemes that set compliance dates and thresholds will help reach mid- and longer-term climate targets.

To have an impact, MEPS schemes need to cover a significant share of each segment of the building stock. MEPS based solely on trigger points (such as transfer of ownership, new lease, or major renovations) are therefore not consistent with a long-term full decarbonisation of the European building stock. The design of MEPS must also avoid locking in fossil fuel usage and infrastructure or inefficient building standards; all energy renovation activities should meet a minimum performance threshold as a step to higher performance. MEPS must be designed as a progressive scheme, with a high level of ambition from the start and a clear timetable of compliance dates.



The design of MEPS must avoid locking in fossil fuel usage and infrastructure or inefficient building standards; all energy renovation activities should meet a minimum performance threshold as a step to higher performance.



MEPS DESIGN SCHEMES

FOR DIFFERENT BUILDING SEGMENTS AND OWNERSHIP STRUCTURES

To ensure that climate targets are reached, MEPS need to apply at building level to all building typologies. However, the different building segments require differentiated approaches.

The building stock in the EU is heterogenous in terms of age classes, ownership structures, use and energy performance. Combining information about age classes, floor areas⁴ in different segments and energy consumption (see Figures 2 and 3) allows us to identify the buildings which have the highest final energy consumption.

- In the residential segment, approximately one-third of the floor area consumes more than 200 kWh/m²/year. This is a total of 4.9 billion m² of surface area.
- In the non-residential segment the buildings above 200 kWh/m²/year account for almost 40% of the floor area, with a total of 2.2 billion m².
- Residential buildings should not be excluded from MEPS. In terms of absolute values, the floor area of the worst-performing residential buildings is more than twice the size of the floor area of the worst-performing non-residential buildings. A MEPS scheme focusing on worst-performing buildings in the residential sector would therefore result in greater energy savings compared to a focus on the non-residential sector only. It would also be socially fairer to renovate buildings in which people live as a priority.
- To realistically get on track to achieving the 2050 climate neutrality target, MEPS need to be applied to more than 50% of the entire building stock.



To realistically get on track to achieving the 2050 climate neutrality target, MEPS need to be applied to more than 50% of the entire building stock.



⁴ We consider floor area relevant since the energy consumption per building is highly determined by its floor area.

Figure 2: Distribution of EU residential building stock per kWh/m²/year and construction period⁵

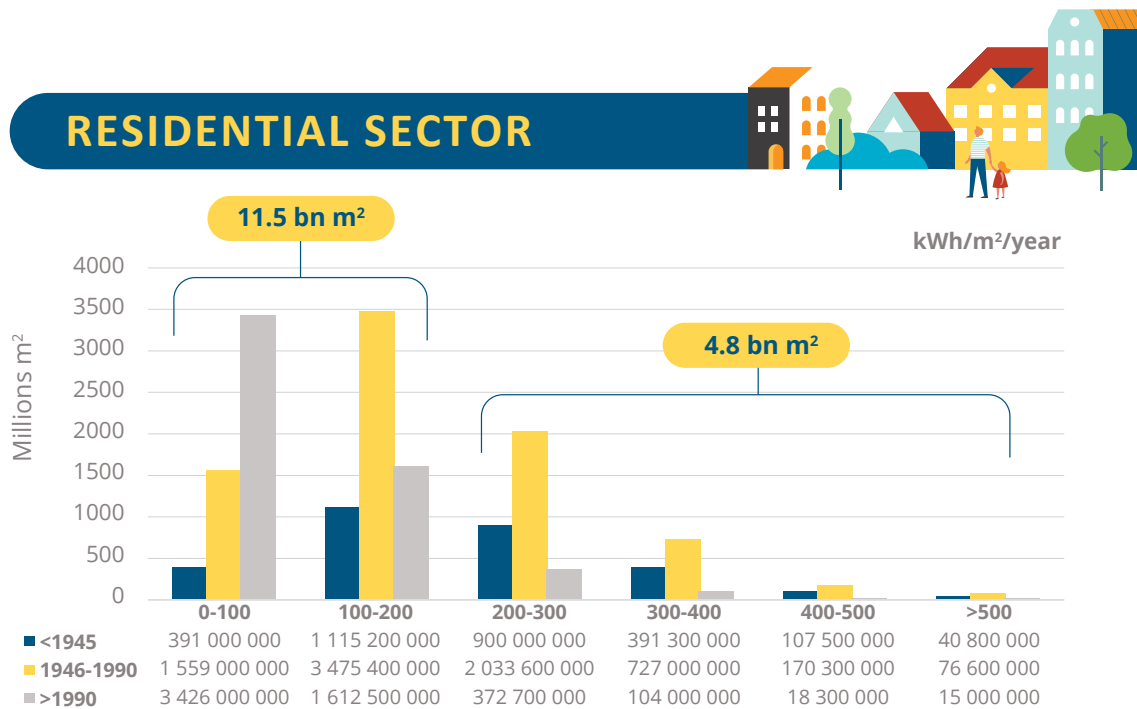
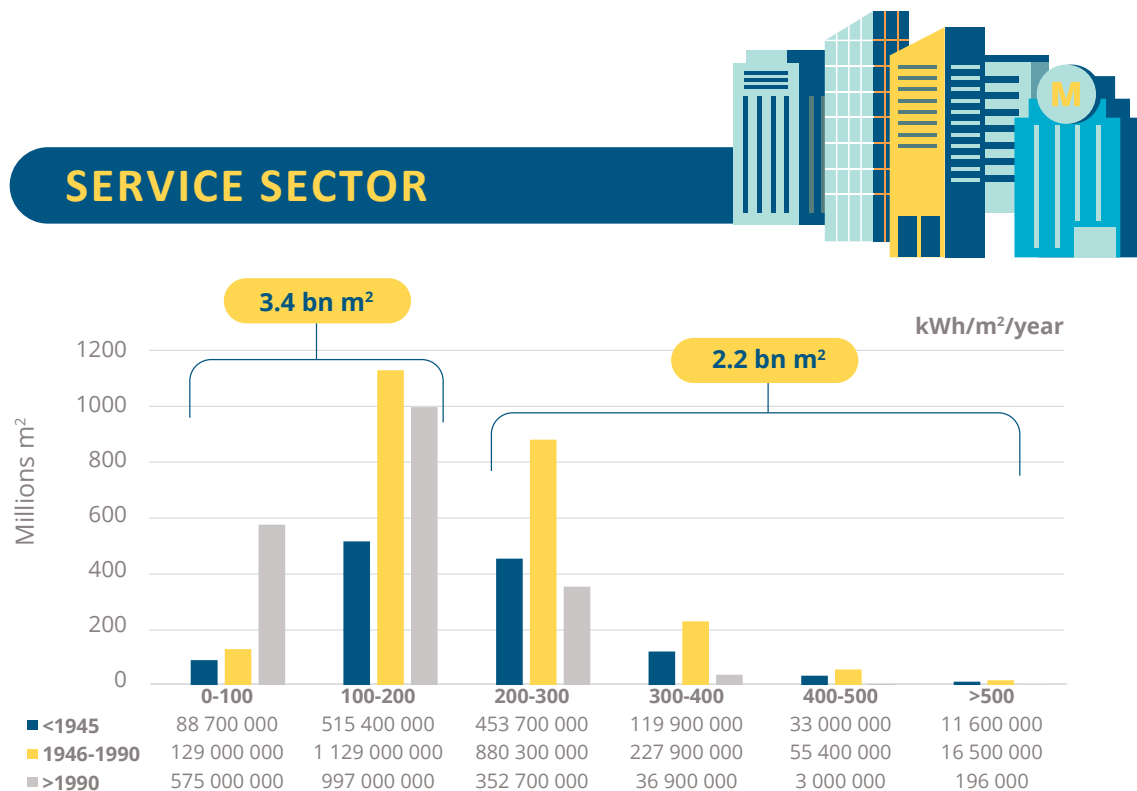


Figure 3: Distribution of EU non-residential building stock per kWh/m²/year and construction period⁶



⁵ 11,579,648,757 m² uses up to 200 kWh/m²/year; 4,957,272,824 m² uses more than 200 kWh/m²/year

⁶ 3,434,015,605 m² uses up to 200 kWh/year, the remaining 2,191,075,389 m² uses more than 200 kWh/year



MEPS schemes need to cover both residential and non-residential buildings to capture the energy efficiency and carbon reduction opportunities. Since the ownership structure is very different in the two sectors, targeted support is needed to supplement a differentiated design for MEPS schemes.



The differentiation between non-residential and residential is important as non-residential buildings have a shorter renovation cycle and larger floor areas per building. Building owners are often in a stronger financial position, and the impact of the renovation process for building occupants and users is often easier to mitigate, for example due to a higher tenant turnover.

MEPS schemes need to cover both residential and non-residential buildings to capture the energy efficiency and carbon reduction opportunities shown in Figures 2 and 3. Since the ownership structure is very different in the two sectors, targeted support is needed to supplement a differentiated design for MEPS schemes.

MEPS schemes should also take account of the size of non-residential buildings. Experiences from the Dutch MEPS scheme for office buildings show that owners of larger offices are more often able to invest and plan for the renovation process than owners of smaller office buildings. The latter therefore need more guidance and preparation time to act. **A building renovation passport can provide guidance while ensuring the renovation steps bring the building to the 2050 zero emission building level.**

Public buildings have a special role to play. Large buildings owned by public authorities should play an exemplary role in implementing the EU Renovation Wave Strategy. A MEPS scheme for public buildings will help achieve the requirement of Article 6 in the Energy Efficiency Directive (EED) recast which has been agreed in spring 2023. It requires that 3% of the total floor area of buildings owned by public bodies are to be renovated to NZEB or ZEB levels annually. MEPS requirements for public buildings will ensure that the worst-performing buildings of this segment are not forgotten.

In the residential building stock, it is useful to differentiate between multi-family buildings and single-family homes. As well as being different types of buildings, they have different ownership structures, which will have an impact on decision-making processes and investments for renovation works. The policy mix providing support and incentive schemes must therefore be clearly targeted.

Among single-family buildings, low-income households will require more upfront financial support, while older owners will require specific incentives to invest in renovation works with a long pay-back time. Within the segment of multi-family buildings, an apartment building with heterogeneous ownership will need additional support to take optimal investment decisions.

We therefore propose different MEPS designs for different building types, so that the schemes can be implemented as smoothly and effectively as possible. These are outlined in the next section. Examples from practice show that it is possible to develop MEPS for different building segments including a supportive policy framework and communications directed at the diverse target groups.⁷

⁷ https://energy.ec.europa.eu/document/download/b90f928d-91fb-4262-8676-f887a8737fe7_en

THE SPECIFIC CASE OF SOCIAL HOUSING

There is no common definition of the term “social housing” in the EU. Some European countries have a high share of social housing, while others do not even have the concept.

The objective of social housing is to increase the supply of affordable housing for a specific target group defined according to its socioeconomic status and/or vulnerabilities.⁸

In many European countries, social housing is provided by the public sector. It would therefore fall under the MEPS category of public buildings. In other countries, private housing providers deliver social housing (e.g. through a requirement to provide a certain percentage of their building stock as “social housing”) and often receive public support for this.

Social housing will therefore not fall in the same categories of the MEPS scheme in each Member State. National MEPS should be designed to ensure that occupants of social housing benefit early from the renovation activity and the associated structural improvements of their living conditions. Where the concept of social housing does not exist, national governments should make a specific effort in their MEPS schemes to reach low-income and marginalised groups through comprehensive financial support and renovation schemes.



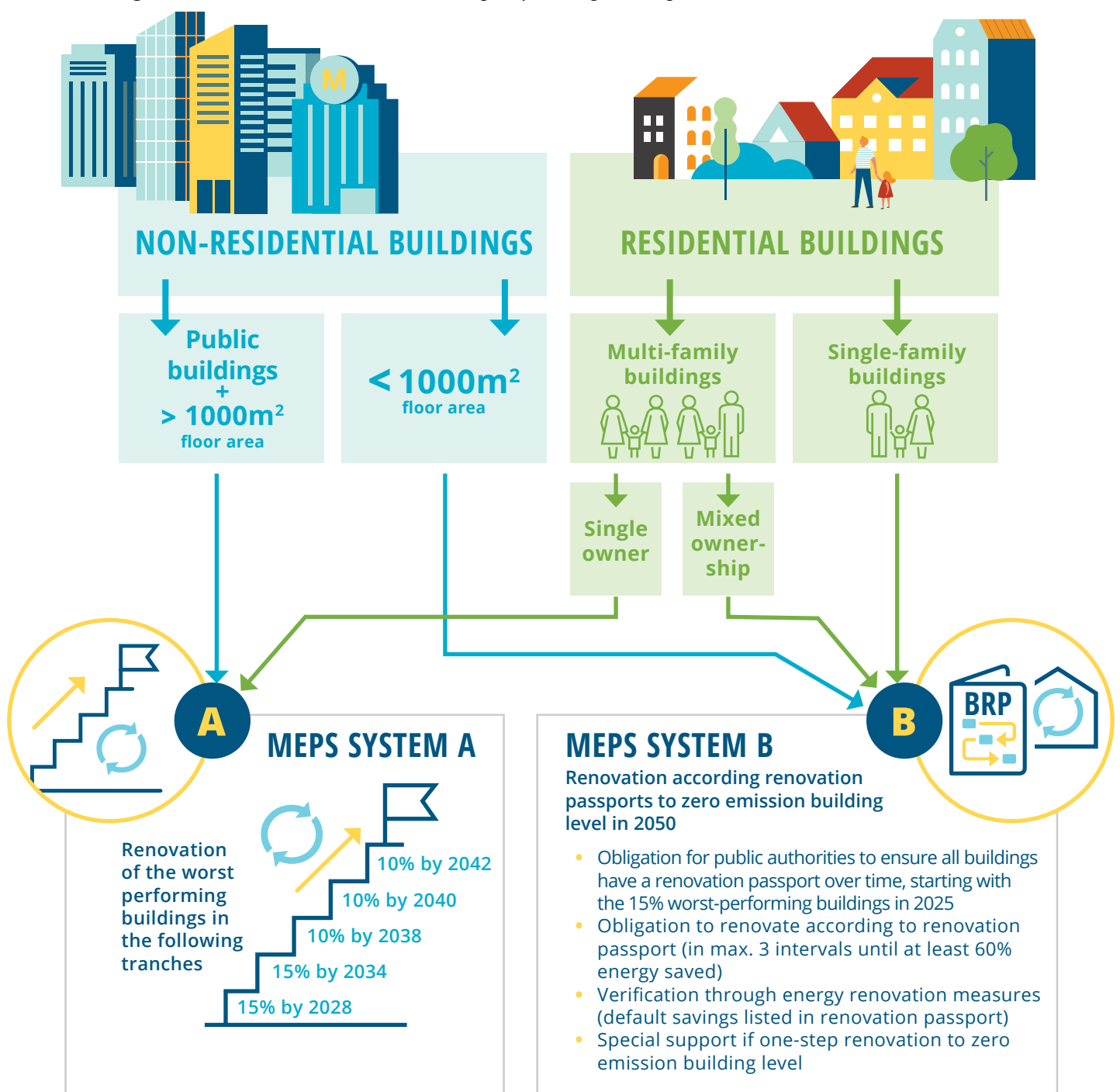
⁸ Source: [https://www.europarl.europa.eu/RegData/etudes/note/join/2013/492469/IPOL-EMPL_NT\(2013\)492469_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/note/join/2013/492469/IPOL-EMPL_NT(2013)492469_EN.pdf)

DESIGNING MEPS

A COMPREHENSIVE PROPOSAL

To capture the full potential of MEPS, we propose the introduction of two different MEPS schemes covering all building segments. Figure 4 gives an overview of the two approaches, with the first covering larger buildings with single owners and the second addressing the harder-to-reach segment of smaller buildings and/or those with mixed ownership structures. The enactment dates and the proposal for the different tranches illustrate the architecture of the scheme and is not strictly based on a thorough impact assessment. The exact numbers will have to follow the relevant climate targets for the building stock (e.g. a newly to be determined zero-emission-building, ZEB, standard).

Figure 4: Overview of differentiated MEPS designs by building stock segment



MEPS SYSTEM A: MINIMUM ENERGY PERFORMANCE STANDARDS WITH DYNAMIC REQUIREMENTS OVER TIME



MEPS system A applies to larger buildings where renovation decisions are made by a smaller group of decision-makers, and which have the professional financial (and technical) management to facilitate investment decisions and secure financial resources.

MEPS system A should cover:

- Larger non-residential buildings (>1000 m²)⁹
- Public buildings
- Residential multi-family buildings with a single owner.

This MEPS schemes follows a straightforward design. Progressive minimum performance thresholds, expressed in final energy consumption, are enforced over time, consistent with the path to fully decarbonise the building stock in the EU by 2050 (see Figure 5).

The starting point for the national MEPS scheme in each Member State is defined by the state of the building stock at the moment of the entry into force of the Energy Performance of Buildings Directive (EPBD). The first step is to divide the relevant segments of the building stock (e.g. large non-residential, larger single-owned multi-family buildings, public buildings) into percentiles.

To illustrate this, we take the example of the German residential building stock. According to current data,¹⁰ the 15% worst-performing residential buildings consume more than 270 kWh/m²/year; the worst 30% more than 210 kWh/m²/year; and 50% more than 155 kWh/m²/year.

The MEPS scheme would start by setting a first threshold for 1 January 2028¹¹. By this date, the 15% worst-performing buildings in terms of final energy demand will need to be renovated so that this percentile consumes less than the median (in Germany, this would mean the renovated buildings should consume less than 155 kWh/m²/year).



FAST FACTS



MEPS scheme A applies to **large non-residential buildings**. It follows a straightforward design based on **progressive minimum performance thresholds** which are enforced over time.



Building segments are divided into percentiles. After each segment has been renovated, a new minimum level of the next renovation is redefined, creating **a dynamic renovation system**.

⁹ Threshold of >1000 m²: experience in the Netherlands indicates that this threshold avoids difficulties for landlords to comply with the MEPS scheme (<https://stadszaken.nl/artikel/4309/54-procent-van-de-kantoren-koerst-naar-onbruikbare-status-vanaf-2023>); for comparison: the average floor area of an office building in Germany is 1620 m² (https://www.destatis.de/DE/Presse/Pressemitteilungen/2021/03/PD21_N019_31121.html); the average EU office building has floor area of 686 m². It may be useful to further differentiate non-residential buildings with specific consumption patterns such as hospitals, offices, or, supermarkets.

¹⁰ Krieger et al. (2019). Vorbereitende Untersuchungen zur Erarbeitung einer Langfristigen Renovierungsstrategie nach Art 2a der EU-Gebäuderichtlinie RL 2018/844 (EPBD). <https://www.bmwk.de/Redaktion/DE/Downloads/Studien/vorbereitende-untersuchungen-zur-langfristigen-renovierungsstrategie-ergaenzung.pdf>

¹¹ Please note that the dates and percentages are exemplary to illustrate the architecture of the scheme.

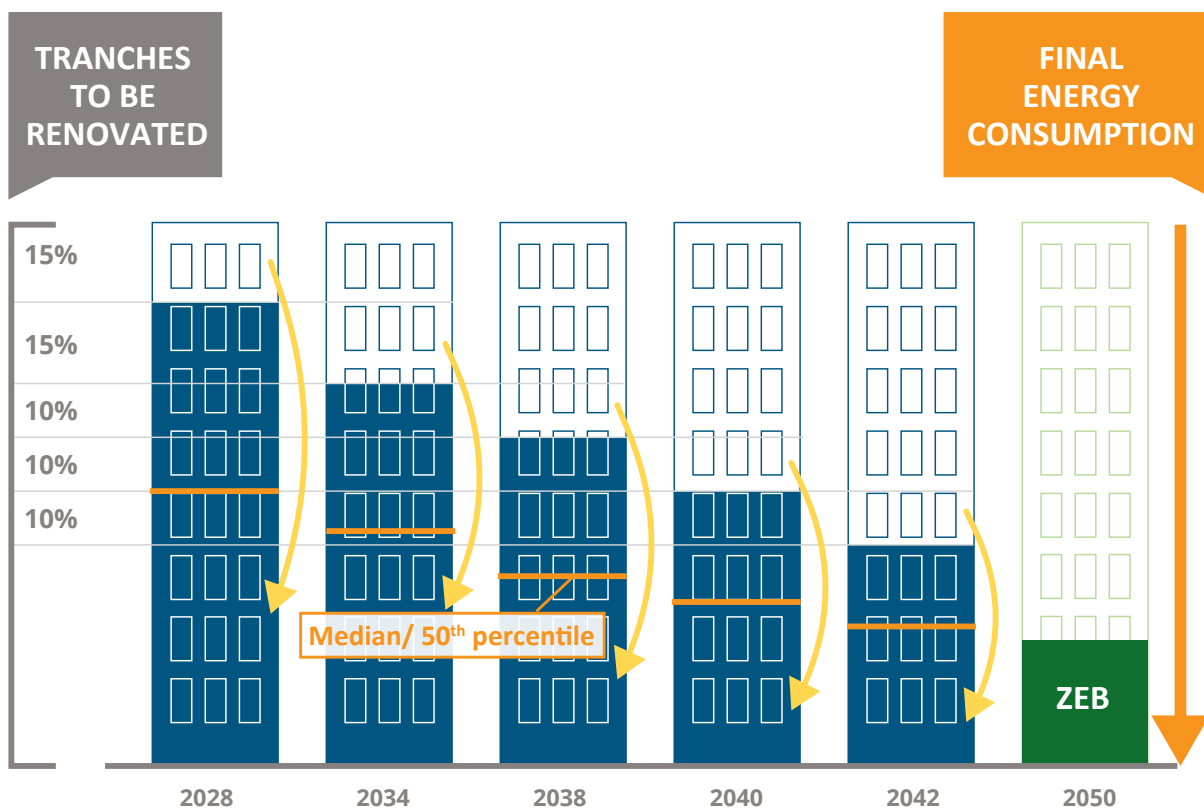
These newly renovated buildings will reduce the median level of energy consumption, which in turn will define the new minimum level for the next renovation tranche. After each tranche has been renovated, the median is redefined. This creates a dynamic renovation system which is supported by technological advancement and innovation in the construction sector.

- The next 15% of buildings must be renovated to be better performing than the new median by 1 January 2034
- The next tranche (10% of buildings) must be renovated to consume less than the again updated median by 1 January 2038.
- The next tranche (10% of buildings) must be renovated to consume less than the newly updated median by 1 January 2040.
- The next tranche (10%) must be renovated to consume less than the newly updated median by 1 January 2042
- All buildings need to reach zero emission building level by 1 January 2050.

Figure 5 illustrates MEPS system A in a simplified way. Reaching the dynamic median is a minimum requirement. Deep renovation going beyond this level should be stimulated, e.g. through tax credits.

Member States may decide to link the individual tranches to the respective EPC levels to ease compliance with the scheme. This may also help with providing support to target groups (see the “policy mix” section below).¹²

Figure 5: Renovation roadmap for worst-performing buildings according to the schedule of MEPS Scheme A. The renovation has to be at least better than the median level of energy performance.



¹² While identifying worst performing buildings through EPCs is probably the easiest way, there are other ways conceivable, e.g. proxy based on the age of construction, proxy based on extrapolating EPCs of similar building type, proxy based on energy bills and/or data from energy management.

MEPS SYSTEM B: MINIMUM ENERGY PERFORMANCE STANDARDS SUPPORTED THROUGH RENOVATION PASSPORTS



MEPS system B applies to smaller non-residential buildings, multi-family buildings with many different owners of individual units, and single-family buildings (see Figure 4).

In these building segments, decision-making processes can be more difficult, and building owners often require more advice and guidance on how to renovate and more support to finance the measures. In these cases, the MEPS scheme is linked to the implementation of renovation measures according to a long-term renovation passport for the building.

MEPS system B, supported by mandatory building renovation passports, should cover:

- Smaller non-residential buildings <1000m²
- Residential multi-family buildings with multiple owners of the individual units
- Single-family buildings.

The core of this type of MEPS scheme is a mandatory building renovation passport. For all individual buildings under MEPS system B, building renovation passports must be issued progressively, starting with the 15% worst-performing buildings in 2025. Worst-performing buildings can e.g. be identified through the EPCs. Public authorities should be required to issue the renovation passports. They should also ensure financing to cover their costs, including public or private funding (e.g. banks and other financial institutions). Public funding may e.g. be derived from energy efficiency obligation schemes (under EED Article 8) or from EU funds.

The renovation passport lists coordinated measures to achieve the decarbonisation target of each individual building. Within five years of issue, measures have to be implemented that correspond to improving the building's energy performance by at least 20%; this increases to 40% in the next five-year period, and 60% in the following five years. Ideally, renovations are deep renovations in the first step already. Thus, Member States should be encouraged to adopt a system to achieve at least 60% of the savings with the first renovation. It would relieve homeowners of the obligation to achieve additional energy savings in the next intervals. The 15% worst-performing buildings in these building stock segments should receive their renovation passports by 2025, the next 15% by 2027, the next 10% by 2029, adding up 10% tranches every second year until all buildings have received a renovation passport.

Verification is shown through the energy renovation measures: default values for energy savings of the measures are listed in the renovation passport. The renovation passport should be updated after each renovation cycle. By 2050, all buildings in this segment will have to reach the zero emission building standard. Alternatively, EPCs can be used to verify energy savings.



FAST FACTS



MEPS scheme B applies to **single family homes and smaller non-residential buildings**.



It relies on a **building renovation passport** which is issued progressively, starting with the 15% worst-performing buildings in 2025. The renovation passport lists coordinated measures to achieve the decarbonisation target of each individual building.



The rollout of renovation passports should be **supported by public funding**.

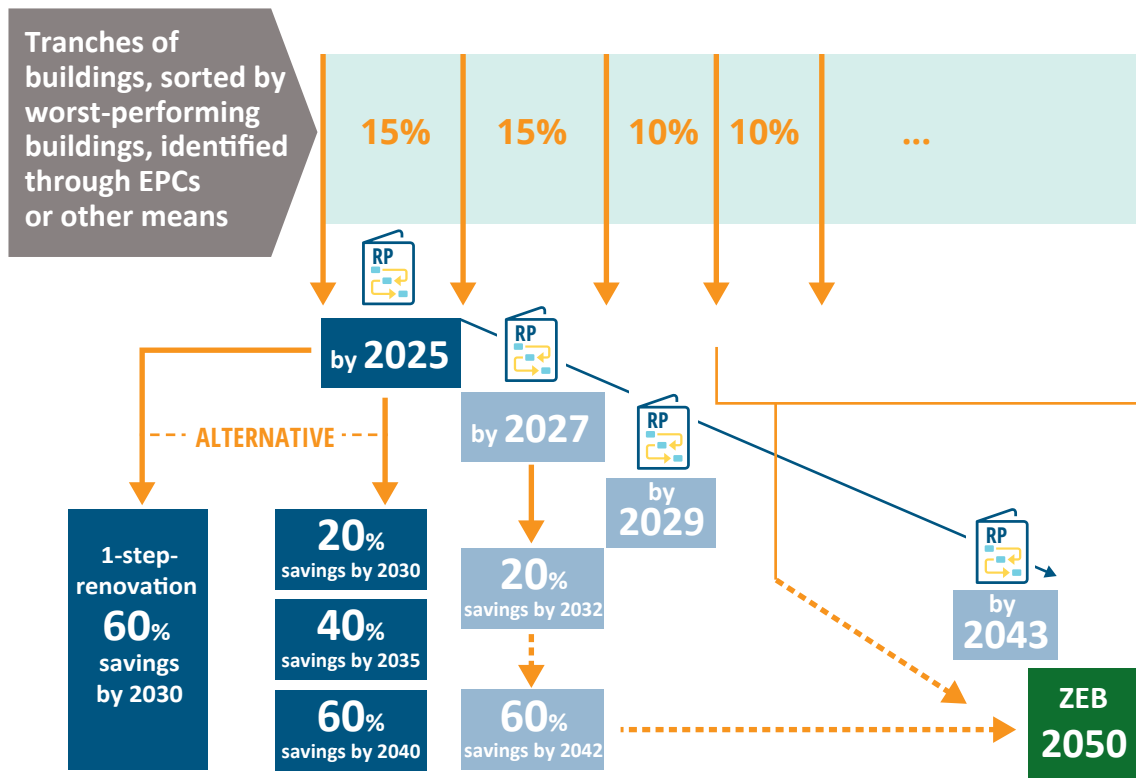
WHAT IS A RENOVATION PASSPORT?



A renovation passport provides a clear roadmap for staged (with a maximum number of steps) or one-step deep renovation over the lifetime of a building, helping owners and investors to plan the best timing and scope for interventions. The target for the renovation of individual buildings should be at least zero emission building level by 2050. The decarbonisation pathway and milestones in the national building renovation plans (see EPBD recast proposal 2021) should underpin the renovation roadmap.

There are several ways renovation passports interact with energy performance certificates. EPCs can be used as an input for a renovation passport, providing the database for renovation advice. On the other hand, renovation passports can be integrated in national EPCs, turning the EPC into an instrument to provide clear renovation advice towards achieving deep energy renovations. Ideally, there is only one tool in the future combining all the relevant information in a way that can easily be updated and rolled-out fully across EU Member States.

Figure 6: Renovation roadmap for worst-performing buildings according to the schedule of MEPS Scheme B.



POLICY MIX TO SUPPORT TARGET GROUPS IN IMPLEMENTING MEPS

To be effective, fair, accessible and affordable, a MEPS scheme needs supporting policy instruments tailored to the needs of different target groups. In addition, well-tailored support schemes can help ensure that supply can match renovation needs.

Scarce public financial resources should be used wisely. Direct support for energy renovation work should be especially accessible to vulnerable groups at risk of energy poverty. Municipalities should get support to prioritise the energy renovation of social housing, for example by using EU funds.

Local and regional authorities and energy agencies can play a key role in providing information, especially to owners of smaller properties, including single-family buildings and smaller offices. Evaluation has shown that these owners have less access to information about MEPS requirements, available support schemes and renovation measures. Information and knowledge distributed at different governance levels can help compensate for these deficits and support implementation of MEPS.

In addition, advisory services help avoid lock-ins. Renovation passports for individual buildings and one-stop-shops targeting all building owners should be considerably strengthened. One-stop-shops have been shown to also spur the renovation of multi-family buildings with heterogeneous ownership,¹³ where decision-making is more complex.

Financial support schemes should be designed to support MEPS compliance ahead of the deadline, acting as an early indicator of future standards, as in the following example which uses national EPC classes as benchmarks:

- **Before 2026:** grant to cover 15% of renovation costs if renovated up to level D, 25% if up to level C, 30% if up to level B and 45% if up to level A.
- **Before 2029:** 15% of renovation costs if renovated up to level C, 25% if up to level B, 35% if up to level A.
- **Before 2036:** 15% of renovation costs up to level B, 25% up to level A.
- **Before 2042:** 15% of renovation costs up to level A.

Low-income groups and worst-performing buildings would get a higher support rate on top (+5%).

Additional tax incentives may reward energy savings through deep renovation beyond the minimum requirements. To achieve bigger savings and trigger one-step renovation to zero-emission level within the first five years (e.g. 2030) Member States are encouraged to adopt higher levels of acceptable savings or to introduce special support schemes for multi-family buildings with multiple owners and single-family buildings. While the support level should be defined by each Member State according to national circumstances, it has to be significant enough (e.g. 40% of renovation costs).

¹³ BPIE (2019) One-stop-shops – or integrated renovation services. A wealth of promising experiences in Europe. <https://www.bpie.eu/wp-content/uploads/2019/09/EU-Energy-innov-article-autumn-2019.pdf>; BPIE (2019) Benchmarking of promising experiences of integrated renovation services in Europe. https://www.bpie.eu/wp-content/uploads/2019/09/TR_D1.1_BPIE_30_08_2019_FV.pdf



Conclusions

To meet the 2030 and 2050 climate targets in the building sector, deep renovation needs to ramp up this decade. Minimum energy performance standards can effectively accelerate deep energy renovation, in particular if they meet the following design principles:

- ✓ Address the worst-performing buildings first so that people see an immediate and meaningful impact.
- ✓ Be aligned with the owner's ability to invest.
- ✓ Make requirements binding and foreseeable to accelerate innovation in the energy renovation supply chain.
- ✓ Have an effective compliance support and enforcement system.
- ✓ Define regular and frequent milestones.

To ensure that climate targets are reached, MEPS should apply to all building typologies, with an initial focus on worst performing buildings. In absolute figures, the floor area of the worst-performing residential buildings is more than twice that of the worst-performing non-residential buildings. Because of this energy saving potential, MEPS should be applied to both residential and non-residential buildings.

The revision of the Energy Performance of Buildings Directive should therefore include these principles in its mandate to EU Member States and should avoid introducing exemptions which could lead to undermining the MEPS system. Any deviation from the principles should only be the case of buildings which fall under a heritage protection status in the Member States.

In order to be effective, accessible and affordable, any MEPS scheme put into place must be implemented within a comprehensive ecosystem of supporting policy instruments tailored to the needs of the different target groups.



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