

REGULATORY ASSISTANCE PROJECT

Next steps for MEPS: Designing minimum energy performance standards for European buildings

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Summary

An ambitious but flexible EU framework of minimum energy performance standards will enable Member States to introduce tailored measures that make a significant contribution to social, economic and climate goals.¹

A target to reduce greenhouse gas (GHG) emissions by at least 55% by 2030, combined with a history of underachievement on decarbonising the existing building stock, means that the European Union needs significant new energy renovation policies. Policymakers around the world are introducing minimum energy performance standards (MEPS) to improve the energy performance of existing buildings and deliver a range of social, economic and climate benefits. In line with this trend, the European Commission has committed to propose MEPS in the revision of the Energy Performance of Buildings Directive (EPBD) later this year, as part of a package of practical and financial support for renovation. This initiative is part of the Commission's Green Deal agenda, which aims to reconcile climate neutrality and economic objectives while ensuring “no person and no place is left behind.”

MEPS are regulated standards that require targeted buildings to meet a minimum level of energy performance at a future date or trigger point like rent or sale.

By guaranteeing a minimum level of renovation, MEPS can complement the existing EU policy framework, which has proved inadequate to drive the appropriate level of energy renovation activity. MEPS can increase the effectiveness of this framework by directing building owners towards funding and support tools and driving legislators to align these tools with long-term climate objectives.

There is much that EU and Member State policymakers can learn from the existing models and designs of MEPS. Effective standards set out a single step or staged path to deep renovation, are easily communicable, and offer additional benefits in terms of building up workforce capacity, scaling up the supply chain, and incentivising renovations that go beyond the standard. A number of jurisdictions have introduced MEPS for the explicit purpose of improving housing standards. Starting with the worst-performing buildings and when introduced hand in hand with adequate financial support for renovation and social safeguards, standards can deliver significant social benefits and alleviate energy poverty. Fleet targets are alternative MEPS designs that put an obligation on stock managers or oversight bodies to reach targets in a specific building stock. These entities translate the target and communicate a renovation requirement for each individual building.

The benefits expected from rolling out a MEPS measure depend on the target buildings, the ambition of the standard, the trigger point or date by which buildings must be renovated and the effectiveness of the enabling framework. To date,

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implemented examples of MEPS are not aligned with the objective of fully decarbonising before 2050, but proposals exist on how to do this.

To generate maximum benefits, legislators should introduce a MEPS framework for Europe that is flexible, applies to all segments of the building stock and has firm, timebound compliance deadlines to reach full decarbonisation. The MEPS framework must be in line with the 2050 goal and the ambition must increase over time – either through tighter standards or by bringing more buildings under a standard – to reach this goal.

The energy performance certificate (EPC) is the most obvious tool to communicate a national standard and to check compliance. It is imperfect, however, and legislators should use the MEPS rollout period to reinforce the EPC assessment process, expand EPC coverage and populate databases. Despite their relevance for defining the standard at national level, there is a lack of harmonisation of EPCs across the EU. Setting an EU-level requirement based on an EPC class may be challenging and require careful evaluation of the impact across the different Member States. A European target based on an overarching energy performance benchmark of the national stock or a stock average target are alternative options. In all designs, the EU MEPS framework should recognise the variety of national building stocks and provide space for Member States to design appropriate measures at national level.

Recommendations

Legislators should ensure that:



The EU MEPS framework aligns with 2030 and 2050 climate targets and uses compliance deadlines.



The MEPS framework delivers maximum social benefits as part of strengthened EU and national policy frameworks.



Additional measures incentivise maximum renovations before the compliance deadlines.



The MEPS framework leads to deep renovations.



The MEPS framework covers all segments of the building stock.



EPCs act as a compliance tool and are further improved and rolled out alongside the MEPS implementation.



The different impacts of an EU-level MEPS target on Member States are fully considered. A fleet standard may be more appropriate than a common EPC standard.



Additional measures are put in place to provide adequate information to building owners.



National authorities are empowered to implement MEPS, including by considering state aid constraints.

Introduction

The scale of the challenge to decarbonise the buildings sector cannot be underestimated. To meet the 2050 climate neutrality goal and new EU emissions reduction target of 55% by 2030, the European Commission states that the buildings sector must do more to achieve a 60% cut in greenhouse gas (GHG) emissions by 2030 compared to 2015 levels.

This swift acceleration of action in the next decade will be followed by sustained efforts beyond 2030 to accomplish full decarbonisation of the sector before 2050, making building renovation a long-term objective of the EU's climate policy.

This objective is also closely linked to the EU's social agenda: The European Green Deal commits to being just (fair) and inclusive² and the Commission's Renovation Wave strategy³ prioritises renovating the worst-performing buildings and alleviating energy poverty as one of three headline objectives.

Success requires a huge step up in efforts to reduce energy consumption in buildings and to decarbonise heating across the EU. Residential and tertiary sector emissions fell by only 16% between 2005 and 2015, which illustrates the scale of the challenge in the next nine years.⁴

At present, energy renovations only occur in around 1% of the stock per year, and 0.2% undergoes a deep renovation.⁵ According to the Building Performance Institute Europe (BPIE), the annual deep renovation rate should rise from the current 0.2% to 3% as quickly as possible to be in line with the new climate target.⁶ This constitutes a fifteen-fold increase in effort.

The Commission also models the renovations needed to achieve the 60% target. They assess that 'Type 1' renovations, which improve the thermal integrity of the building fabric, will need to be carried out in 1.4% to 2.4% of the residential stock annually by the second half of the decade.⁷ Alongside this effort to reduce energy consumption in buildings, reaching the new climate goal will also require the decarbonisation of energy sources through a significant acceleration of heating system replacements.

Putting the buildings sector on track to 60% GHG cuts in 2030 and climate neutrality in 2050 will require a significant scaling up of public policy planning capabilities to implement effective large-scale renovation programmes, supply chain capacity, training and skills, financial deployment and a swift rollout of practical support to

² European Commission. (2019). *The European Green Deal*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2019:640:FIN>

³ European Commission. (2020a). *A Renovation Wave for Europe – greening our buildings, creating jobs, improving lives*. COM(2020) 662 final. https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1835

⁴ European Environment Agency. (2019). *Greenhouse gas emissions by aggregated sector*. <https://www.eea.europa.eu/data-and-maps/daviz/ghg-emissions-by-aggregated-sector-5#tab-dashboard-02>

⁵ In the period 2012-2016. European Commission. (2019). *Comprehensive study of building energy renovation activities and the uptake of nearly zero-energy buildings in the EU*. https://ec.europa.eu/energy/sites/ener/files/documents/1_final_report.pdf

⁶ Buildings Performance Institute Europe (BPIE). (2020). *On the way to a climate-neutral Europe: contributions from the buildings sector to a strengthened 2030 climate target*. <https://www.bpie.eu/wp-content/uploads/2020/12/On-the-way-to-a-climate-neutral-Europe-Final.pdf>

⁷ In the services sector, the increase is from 0.6% to between 1.0% and 1.5%, depending on the assumed mix of policy levers adopted. European Commission. (2020b). Commission staff working document impact assessment accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: *Stepping up Europe's 2030 climate ambition – Investing in a climate-neutral future for the benefit of our people.*, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020SC0176>

building owners — all in the first half of this decade. To be equitable and effective, these steps must harness private-sector finance, target public funds and expand social safeguards to ensure low-income households, particularly tenants, can benefit.

The EU and its Member States need an ambitious and coherent building decarbonisation policy framework to deliver these goals. The reality of low renovation rates and depth in the EU suggests that the current policy framework is inadequate to drive sufficient action. Several analyses, including from the Commission itself, highlight the limitations of the existing framework.⁸ For example, although the Energy Performance of Buildings Directive (EPBD) has led to the development of building codes across the EU, these codes only regulate new buildings and buildings undergoing major renovation,⁹ missing the majority of the existing stock. Tools like energy performance certificates (EPCs) are in place to assess building performance and increase the information available to building owners, but the quality of data on the stock varies across the EU. There is a renovation target in Article 5 of the Energy Efficiency Directive (EED), but it has been so far limited to central government buildings. There are clear gaps that must be filled.

Acknowledging the need for new building renovation policy, the European Commission launched the Renovation Wave communication in autumn 2020. The strategy's goal is to at least double the annual energy renovation rate by 2030 and to foster deep energy renovations.¹⁰ Perhaps the most significant new proposal in the strategy is the introduction of mandatory minimum energy performance standards (MEPS) for existing buildings across Europe as part of a revision of the EPBD in 2021.

MEPS are regulated standards that require targeted buildings to meet a minimum level of energy performance by a future date or trigger point, for example sale or rent.

Crucially, as recognised in the Renovation Wave strategy, these standards are not a standalone policy but are introduced as part of a framework that includes increased practical support to building owners and occupiers and adequate, appropriate funding and finance. The strategy also recognises the importance of providing social safeguards that protect housing affordability and ensure that minimum standards do not create a burden on those least able to bear it. Resourcing at the local level of programmes to enable and check compliance is crucial to ensure that the standard materialises into effective renovations.

This paper aims to contribute to the development of a MEPS framework to be proposed as part of the EPBD revision. It reviews existing models of MEPS ([page 6](#)) and assesses their suitability ([page 11](#)), defines a set of priorities ([page 13](#)) for MEPS within the European renovation policy framework and, finally, proposes a flexible framework for the EU ([page 31](#)).

⁸ Buildings Performance Institute Europe (BPIE). (2021). *The road to climate-neutrality: Are national long-term renovation strategies fit for 2050?* <https://www.bpie.eu/publication/the-road-to-climate-neutrality-are-national-long-term-renovation-strategies-fit-for-2050>; Kruit K., Vendrik, J., van Berkel, P., van der Poll, F., Rooijers, F., Jossen, Q. & de Meulemeester, H. (2020). *Zero carbon buildings 2050: background report*. CE Delft. <https://www.cedelft.eu/en/publications/2474/net-zero-buildings-2050%20>; European Commission, 2020b.

⁹ The impact of the requirement to improve energy performance at major renovation depends very much on how the Member State defines 'major renovation' and on the ambition of the existing energy performance requirements in each country.

¹⁰ European Commission, 2020a.

Models of MEPS

Policymakers across the world have introduced MEPS at national, regional or city level. Quality standards for existing homes in the United States that contain energy-related provisions date back to the 1970s and 1980s. More recently, in the last 5 to 10 years, there has been a significant new wave of interest in broader energy or carbon performance standards for all building types.¹¹

The design of standards varies considerably in line with different local priorities. A growing number of cities and states in the United States have introduced standards that target large, energy-intensive or carbon-intensive non-domestic or multi-family buildings in response to ambitious climate targets. In Australasia, new standards focus on increasing the quality of rented housing. European countries have introduced standards in response to different combinations of objectives – cutting carbon emissions, alleviating energy poverty, improving housing standards, addressing the landlord-tenant split incentive – and therefore target both residential and non-residential buildings. Different worldwide examples are summarised in Table 1.

Table 1. Examples of MEPS around the world

Where	Introduced	Fully enforced	Building stock sector, tenure, building type	Metric	Minimum standard
Netherlands	2018	2023	Office buildings	EPC	EPC C
France	2019	2028	Private homes	EPC	EPC E
France	2019	2023	Rented homes	Energy performance	Worst-performing: using >450 kWh/m ² /year
France	2019	2030, 2040, 2050	Tertiary sector buildings over 1,000m ²	Final energy consumption	40% in 2030, 50% in 2040, 60% in 2050
Flanders, Belgium	2015, 2019	2020, 2023	All homes, but only enforced for privately rented homes	Technical measures	Minimum roof insulation Double glazing
Brussels-Capital, Belgium	2019 (Announced) 2021 (Regulation)	2030, every five years	All domestic and non-domestic buildings	Technical measures	Measures specified by EPC
England and Wales	2016 (Regulation)	2020, 2028	Privately rented homes	EPC	EPC E, 2020 EPC C, 2028 (proposed) ¹²

¹¹ See for example: Sunderland, L., & Santini, M. (2020a). *Filling the policy gap: Minimum energy performance standards for European buildings*. Regulatory Assistance Project. <https://www.raponline.org/knowledge-center/filling-the-policy-gap-minimum-energy-performance-standards-for-european-buildings/>; and Nadel, S. & Hinge, A. (2020). *Mandatory building performance standards: A key policy for achieving climate goals*. American Council for an Energy-Efficient Economy. <https://www.aceee.org/white-paper/2020/06/mandatory-building-performance-standards-key-policy-achieving-climate-goals>

¹² Department for Business, Energy and Industrial Strategy. (2020). *Improving the energy performance of privately rented homes in England and Wales*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/946175/prs-consultation-2020.pdf

Where	Introduced	Fully enforced	Building stock sector, tenure, building type	Metric	Minimum standard
England and Wales	2016 (Regulation)	2018, 2023, 2030	Privately rented non-domestic buildings	EPC	EPC E (2018, 2023) EPB B, 2030 (confirmed) ¹³
Scotland	2020 (Regulation)	2021, 2025, 2028	Privately rented homes	EPC	EPC E, 2021 EPC D, 2025 EPC C, 2028 (proposed) ¹⁴
Boulder, Colorado	2010	2019	Privately rented homes	Points based (energy and carbon)	Points threshold: national rating system or table of points ¹⁵
Washington, D.C.	2018	2026	Commercial and multi-family buildings larger than 10,000 sq. ft	Energy Star Benchmark score	Median Energy Star score for building type or reduce energy use intensity by >20%
Reno, Nevada	2019	2026	Commercial and multi-family buildings larger than 30,000 sq. ft	Energy Star score/energy and water use intensity	Multiple energy and water options ¹⁶
New York, New York	2019	2024	Commercial and many multi-family buildings larger than 25,000 sq. ft	Carbon intensity (CO ₂ /sq. ft)	Limits specific building use categories. Target of aggregate 40% reduction by 2030, 80% by 2050
Washington state	2019	2026	Commercial buildings larger than 50,000 sq. ft	Energy intensity (kBtu/sq. ft)	Median energy use intensity for building type
St. Louis, Missouri	2020	2025	Commercial, multi-family, institutional and municipal buildings larger than 50,000 sq. ft	Energy use intensity	To be decided; will require 65% of buildings to improve, based on benchmark
New Zealand	2017	2019	Privately rented homes	Measures-based	Minimum ceiling and floor insulation; fixed heating systems
Victoria, Australia	2018	2021	Privately rented homes	System and appliance efficiency standards	Efficiency standards for heating, cooling and appliances

Source: Adapted from Sunderland, L. & Santini, M. 2020a

¹³ Secretary of State for Business, Energy and Industrial Strategy. (2020). *Energy white paper: Powering our net zero future*. <https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future>

¹⁴ Scottish Government. (2021). *Draft heat in buildings strategy: Achieving net zero emissions in Scotland's buildings consultation*. <https://www.gov.scot/publications/heat-buildings-strategy-achieving-net-zero-emissions-scotlands-buildings-consultation>

¹⁵ The national Home Energy Rating Score (HERS) is a nationwide rating system. The minimum standard is equivalent to 120 points under this system or 100 points on a prescriptive scoring checklist developed by the city of Boulder based on energy and carbon savings for specific measures.

¹⁶ An Energy Star score of 50 or higher, energy use intensity equal or better than average for building type, Energy Star score 15 points better than baseline year, energy use intensity score reduced by 10% compared to baseline year, or one from a list of prescriptive routes to compliance.

The Netherlands is host to a number of other standards not included above. Privately and socially rented housing is subject to MEPS through voluntary agreements between the government and the sector bodies. The government has also developed a new insulation standard intended to define a ‘2050-fit’ insulation level, designed to ensure buildings are suitable to be connected to low temperature heat in place of gas.¹⁷ Scotland also has plans to build on its current regulatory regime to introduce a minimum standard of EPC C for all homes by 2035 and a requirement for zero-emissions heating systems by 2045.¹⁸ Further standards are also in development in Boston, Cambridge, MA, Los Angeles, San Francisco and Seattle.

The numerous examples of designs for MEPS can be summarised into seven models.

◆ Single performance standard targeting the worst-performing buildings.

This is the most common model in Europe. The standard requires target buildings to be improved to a prescribed energy performance standard by a set date. In the European examples, this is most commonly defined by the EPC class, which classifies energy performance usually on an A to G scale from best to worst. Examples include the French standard for homes to be EPC ‘E’ by 2028, the Dutch standard for all offices to be EPC ‘C’ by 2023 and the EPC ‘E’ standard for privately rented homes by 2020, and for rented non-domestic buildings by 2023 in England and Wales. These standards all target the worst-performing elements of the stock but the proportion of buildings included varies according to how different jurisdictions set the expected performance.

◆ Progressive performance standards, based on EPC class.

A smaller number of European models build on the single standard by adding a trajectory of increasingly stringent requirements over time. For example, the Scottish standard requires rented homes to be EPC ‘E’ by 2021 and EPC ‘D’ by 2025. The French standard for non-domestic buildings requires building owners to reduce final energy consumption by increasing percentages each decade. Although the Dutch regulation specifies only the single EPC ‘C’ standard for offices by 2023, the government assessed and widely communicated a further standard of EPC ‘A’ in 2030. Given this indication of intent, stakeholders in the commercial sector have already begun preparing for this future standard, illustrating the impact of the signalling effect of a progressive standard. It is also interesting to note that the British government is consulting on raising the standard from EPC ‘E’ to EPC ‘C’ for rented homes and to EPC ‘B’ for non-domestic buildings by 2030. These changes would transform the England and Wales standards from single to progressive. However, the late announcement of the more ambitious standard — if introduced, it will likely be announced after full enforcement of the existing domestic standard and shortly before full enforcement for the non-domestic standard — sacrifices the important signalling effect. Building owners have not been afforded the foresight to renovate once, based on a knowledge of the future standard, and this has potentially locked in lower energy savings and sunken costs.¹⁹

¹⁷ Letter from the Minister of Homes Affairs and Kingdom Relations to the President of the House of Representatives of the States General. (2021, 18 March). Isolatiestandaard en Streefwaardes voor woningen [Insulation standards and target values for homes]. https://www.tweedekamer.nl/kamerstukken/brieven_regering/detail?id=2021Z04724&did=2021D10454

¹⁸ Scottish Government, 2021.

¹⁹ Sayce, S. & Marjia, H.S. (2020). *Minimum energy efficiency standards (MEES): One year on: A progress report*. School of Real Estate and Planning, Henley Business School. <https://assets.henley.ac.uk/defaultUploads/MEES-RREF-Report.pdf>

◆ Deep renovation standard.

In contrast to the progressive standard, which moves buildings gradually up through performance levels, the deep renovation standard requires target buildings to be renovated once to a high, 2050-fit performance level. This model is proposed by the advisory French Citizens' Climate Convention: If adopted, all 'F' and 'G' EPC class residential buildings would need to be fully renovated to meet a 'B' standard by 2030, followed by all 'D' and 'E' class buildings to be renovated to 'B' standard by 2040.²⁰ With a deep renovation standard, policymakers can target a smaller number of buildings at each compliance date and achieve the same level of energy or carbon savings as a less ambitious standard covering a greater number of buildings. The deep renovation standard also encourages buildings to be renovated once to a high standard, which can result in higher energy savings and avoid lock-in of suboptimal renovations.²¹

◆ Trigger-point-only standard.

A small number of standards are applied only at a trigger point in the building's lifecycle, which could include sale, rent or major renovation. Under Article 7 of the EPBD, for example, the efficiency of buildings must be upgraded when undergoing major renovation. Another example comes from the Scottish government, which has recently consulted on a proposal for owner-occupied homes to meet an EPC 'C' standard from 2030 when they are sold, with the obligation to renovate being transferable from the seller to the buyer.²² The ability to transfer the obligation removes the burden of renovation from those who are unable to afford or manage an energy renovation before selling and takes advantage of the trigger point of non-energy renovation, extension and improvement undertaken by home buyers. It is important to make a distinction between 'natural' or 'market' trigger points, like sale, rent or renovation, and 'regulated' trigger points, like licensing or safety inspections. The former trigger points are optional; their frequency across the whole stock fluctuates over time, dependent on market activity, and will vary considerably from building to building. The latter are guaranteed and periodic, so they have an impact akin to the use of a firm compliance date.²³ More common than the use of a trigger point alone is the use of a trigger point in addition to a firm compliance date. For example, the standards in England and Wales, and separately in Scotland, are applied two or more years in advance of the compliance date for target buildings that undergo a change of rental contract.

²⁰ Proposals of the Citizen's Climate Convention. (2020). <https://propositions.conventioncitoyennepourleclimat.fr/pdf/ccc-rapport-final.pdf>

²¹ Fritz, S., Pehnt, M., Mellwig, P. & Volt, J. (2019). *Planned staged deep renovations as the main driver for a decarbonised European building stock*. Eceee summer study proceedings. https://www.eceee.org/library/conference_proceedings/eceee_Summer_Studies/2019/7-make-buildings-policies-great-again/planned-staged-deep-renovations-as-the-main-driver-for-a-decarbonised-european-building-stock

²² Scottish Housing and Social Justice Directorate. (2019). *Energy Efficient Scotland: Improving energy efficiency in owner occupied homes*. <https://consult.gov.scot/housing-and-social-justice/energy-efficient-scotland-owner-occupier-proposals>. The most recent draft strategy by the Scottish government proposes the introduction of a backstop date of 2035. Scottish Government, 2021.

²³ An example of the use of a regulated trigger point is the standard for rented homes in Boulder, Colorado. Two rental licensing cycles of four years each were allowed for landlords to comply with the rental housing standard. Petersen, A. & Lalit, R. (2018). *Better rentals, better city: Policies to improve your city's rental housing energy performance*. Rocky Mountain Institute. <https://rmi.org/how-cities-can-ensure-better-rentals-for-everyone>

◆ Measures-based model.

The measures-based model requires buildings to have specific efficiency measures or building systems installed. These standards are more commonly introduced for homes. Examples include the requirements in Flanders, Belgium, for rented homes to have minimum roof insulation and glazing measures, and in New Zealand for minimum roof and floor insulation and fixed heating systems. Implemented models require installation of relatively basic measures and are often one element of broader minimum decency standards for housing. An evolution of the simple measures-based standard comes in the proposed standard in Brussels-Capital that requires all groups of measures, as defined by an improved EPC similar to a building renovation passport, to be installed every five years. This approach sets out a route for each building to reach the target performance of 100kWh/m²/year by 2050 and is therefore a progressive standard.²⁴

◆ Stock average model.

The stock average model defines a benchmark of performance based on the average or median energy or carbon performance of the relevant stock and requires buildings that fall below that benchmark to undertake improvements. The designs often propose multiple compliance routes. Many of the new building performance standards in cities and states in the U.S. use the stock average model. For example, the standard in St. Louis, Missouri, targets large buildings over 50,000 square feet. Based on energy benchmarking data for the building type, it requires the worst-performing buildings, at least 65% of a given building type, to make improvements by 2025. The benchmark will be recalculated by 2026 and new standards will be set every five years, making this model a progressive performance standard.²⁵ Building owners, however, are not given foresight of the long-term trajectory. A prerequisite for the design and introduction of a stock average model is up-to-date and accurate data on buildings' energy or carbon use that is centrally available to the policymaker for defining the benchmark.²⁶ This data, generated through mandatory GHG reporting, for example, serves as an accurate way to check and ensure compliance with the standard.

◆ Renovation target model.

This model requires a proportion of the target stock to be renovated to a prescribed standard every year. Article 5 of the EED is an example of this model; it requires 3% of the floor area of buildings owned and occupied by central government to be renovated to at least minimum energy performance requirements. A prerequisite for this model is good stock data or inventory and stock management to define a renovation plan to meet the target. This model could be better suited to stock portfolios held by one owner or manager, for example, government-owned buildings or social housing.

²⁴ Sunderland, L. & Santini, M. (2020b). *Case studies: Minimum energy performance standards for European buildings*. Regulatory Assistance Project. <https://www.raponline.org/knowledge-center/case-studies-minimum-energy-performance-standards-for-european-buildings>

²⁵ Majersik, C. & Miller, J. (2020, 21 April). *St. Louis passes first building performance standard in the Midwest*. Institute for Market Transformation. <https://www.imt.org/st-louis-passes-first-building-performance-standard-in-the-midwest>

²⁶ This data on the impact of renovation work is often not readily available to policymakers, which impedes progress with building renovation and means that its benefits are insufficiently tracked and quantified.

Assessment of MEPS models

From the case studies and the seven models identified, two ‘families’ of MEPS can be identified: Standards, which clearly set out the requirements for each building, and fleet targets, which put an obligation on stock managers or other sector oversight bodies to assess the stock, set objectives and direct the contribution from individual buildings and communicate this to building owners and users.

Table 2 assesses the models with a common set of priorities using a traffic light system:

- Potential climate impacts, in view of reaching 2030 GHG targets and the 2050 climate-neutrality objective.
- Social benefits in view of the Renovation Wave’s stated objective to renovate the worst-performing buildings and alleviate energy poverty.
- Ease of enforcement.
- Signalling potential to enable building owners to make well-informed decisions about long-term investments and the supply chain to scale up smoothly to support compliance.

MEPS can deliver other benefits, like economic ones, but this would require a detailed macroeconomic assessment. The assessment below is based on the expected impacts of the various models when implemented as part of a renovation framework containing appropriate financial and practical support and social safeguards.

Of the two groups of models, standards are easier to plan and communicate to building owners and the supply chain than fleet targets, making them more effective policy-signalling tools.

The balance of environmental and social benefits delivered by all models depends on the building stock targeted, the ambition of the standard and the trigger point or target date. Many MEPS examples do not ensure alignment with the 2050 goal. Deep and progressive renovation standards, as well as fleet targets, can all be aligned with 2050 objectives. The deep and progressive renovation standards also have the potential to create more impact in the next decade than other models. They can trigger a combination of renovations to meet the new regulations, renovations that go beyond the minimum standard triggered by the signalling effect, and renovations in buildings not required to meet standards but renovated in response to the long-term policy signal.

All models require robust stock data or EPC coverage.

Table 2. Assessment of the MEPS models

	Standards					Fleet targets	
	Single	Progressive	Deep renovation	Trigger-point	Measures-based	Average stock objective	Renovation target
Example	Netherlands: Offices must be EPC 'C' by 2023.	Scotland: Rented homes must be EPC 'E' by 2021 and 'D' by 2025.	French CCC: 'F' and 'G' homes must be EPC 'B' by 2030, followed by 'D' and 'E' by 2040.	Art. 7 EPBD: Building efficiency must be improved at major renovation.	Flanders: Minimum roof insulation and glazing measures.	U.S. standards: Buildings below the average performance must be improved.	Art. 5, EED: 3% of the floor area of government buildings must be renovated each year.
Objective:							
2030 climate contribution	Impact is reliant on a large number of target buildings if standard is not ambitious.	Can incentivise renovation beyond first-stage standard.	A smaller number of buildings needs to be targeted to achieve impact.	Smaller impact and less reliable impact than other models.	Would need to extend to significant number of buildings to have impact.	Little incentive for renovations that go beyond the standard.	Depends on target, date and segment.
2050 alignment	Not aligned with 2050 goal. Requires staged renovation roadmap to avoid suboptimal investments.	Can be aligned with climate neutrality.	Can be aligned with climate neutrality.	No guarantee to reach all buildings. Depends on landing point for buildings.	Better suited to defining minimum decency standards, not full decarbonisation. Not technology neutral.	Periodic benchmark revisions can be 2050 aligned. Lack of long-term view can lead to suboptimal investments.	Depends on target, EPC level and segment.
Social benefits	Depends on the segment. High potential, as it focuses on worst-performing stock.	Depends on the segment. High potential as tackles worst-performing stock and incentivises deeper renovation.	Depends on the segment. High potential as tackles worst-performing stock and delivers deep renovation.	Depends on the segment. Less effective than other models. Can create an underclass of substandard buildings.	Can ensure homes meet minimum decency standards.	Depends on the segment. Examples focus on large buildings, for which there is adequate data and reporting, rather than homes.	Depends on the segment. Does not require every building to be renovated, meaning some buildings may be left behind.
Ease of enforcement	Requires full EPC rollout to the target segment by given date.	Requires full EPC rollout to the target segment by given date.	Requires full EPC rollout to the target segment by given date.	Depends on trigger point. Rent makes use of marketing. After sale enforcement is challenging. Can create market distortions.	Relies on inspection regime or other reporting to check presence of measures.	Requires full EPC rollout, reporting of energy or carbon performance or solid sampling method.	Requires full inventory of target stock. Relies on strong role of stock owner or manager to oversee implementation.
Signalling potential	Good, but only signals shallow renovations.	Strong, easy to communicate, and sets out long-term trajectory.	Strong, easy to communicate.	Good, easy to communicate at a natural trigger point.	Strong, easy to communicate.	Less effective, complex to communicate, no visible trajectory.	Less effective, needs translation into obligation for individual building.

Priorities for designing MEPS in line with Europe's objectives

We have defined the following priorities for MEPS introduced at European level. These priorities build on the headline aims for this decade set out in the Renovation Wave strategy, draw on the analysis of what is needed from the buildings sector to achieve both the 2030 climate target and climate neutrality in 2050, and have been developed in the knowledge of the specific strengths of MEPS as a policy tool.

- ◆ **Provide a roadmap for the building sector to reach climate neutrality by 2050 and trigger renovation towards net-zero buildings.**

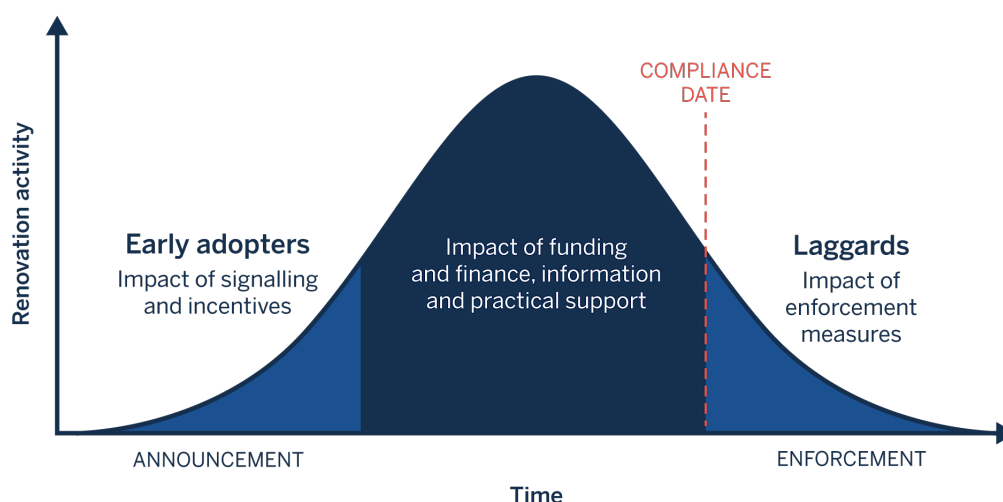
It is crucial to build MEPS into both local and national long-term climate objectives and strategies, for example through sustainable energy and climate action plans and long-term renovation strategies (LTRS). This type of integration ensures that MEPS are led by long-term roadmaps and that renovation activity does not occur in isolation from climate objectives. MEPS based on a deep renovation or progressive standard can set out the long-term destination for each building to be net-zero carbon in 2050. This gives building owners the foresight to renovate while being mindful of both today's standard and tomorrow's destination, encouraging renovations to go beyond minimum compliance.

- ◆ **Send a strong signal to the supply chain to scale up this decade.**

Decarbonising the building stock through accelerated delivery of energy savings measures and heating system replacements will require a significantly upscaled, upskilled and adapted supply chain. By guaranteeing renovation activity, MEPS are an important tool to provide the supply chain with the confidence to scale up. The design of MEPS can also direct supply chain development. For example, a deep renovation standard would encourage the development of skills in whole house solutions and retrofit coordination.

- ◆ **Incentivise maximum renovations in compliance and beyond compliance with MEPS this decade.**

MEPS are introduced with a long lead time — between four and ten years — from announcement to enforcement. If introduced in the revision of the EPBD and transposed by Member States towards the middle of this decade, the earliest compliance date is likely to be near the end of the 2020s. The policy signalling power of MEPS, therefore, needs to be fully utilised to incentivise maximum renovations before the compliance deadline, conceptually illustrated in Figure 1.

Figure 1. Illustrative impact of MEPS combined with framework of practical and financial support

Note: Simplified illustration shows only a single compliance date.

Robust communication of the future standard, the use of transactional trigger points in advance of the compliance date and signposting to the enabling framework of practical support and financing can be effective. If a progressive standard is implemented, both building renovation passports and finance structured to incentivise deeper renovations²⁷ can support activity that goes beyond compliance with a first-stage MEPS. The positive impact of policy signalling on the value chain and on rates of renovation has been evidenced in the Netherlands, as illustrated in the following box.²⁸



Policy signalling: Value chain aligns to support early compliance

Early announcement of the MEPS in the Netherlands, where offices must be EPC 'C' by 2023, triggered major banks to adapt finance to support owners and investors to comply early.

The standard for offices was introduced into legislation in 2018. Alongside it, a framework of technical and practical assistance, government funding and incentives, and preferential private-sector finance supports compliance. The policy also builds on an existing requirement for operators of large offices to undertake all cost-effective efficiency measures.

Following the announcement of the standard, the country's largest banks, ABN Amro, ING Real Estate and Rabobank, internalised the standard in their investment strategies. They implemented measures to support existing clients in developing plans to meet the standard early, and proactively encourage building owners to go beyond the EPC 'C' standard in expectation of rising standards beyond 2023. They signalled that new investments should meet the future standard now and some have extended this requirement beyond office assets to building types not covered by the MEPS. The banking sector is enabling and encouraging early compliance both within and beyond the target sector. This example illustrates how the clarity provided by MEPS enables the value chain to align and enable early action before enforcement.

²⁷ For example, Germany's KfW and the Czech Republic's New Green Savings renovation incentives are geared to offer higher levels of subsidy for deeper renovations.

²⁸ Sunderland, L. & Jahn, A. (2021). *Considering minimum energy performance standards for Germany*. Regulatory Assistance Project. <https://www.raonline.org/knowledge-center/considering-minimum-energy-performance-standards-for-germany/>

◆ **Deliver social benefits of renovating the worst-performing buildings this decade.**

A key strength of MEPS as a policy tool is that, if targeted to address the worst-performing buildings, particularly housing, and embedded in a framework of practical and financial support and social safeguards, their introduction can guarantee renovations for people living in the most inefficient and unhealthy homes. These homes are disproportionately occupied by low-income households, both tenants and homeowners, some with very low-value properties. The current policy framework has not been effective at triggering renovations of these homes and it is essential that this is reversed. Households are burdened by high energy bills and alleviating energy poverty is a key EU priority this decade and at the heart of the European Green Deal. Furthermore, guaranteeing renovation of the worst-performing buildings first will be particularly important to insulate households most burdened by the impact of a new carbon price on heating fuels, as envisaged in the extension of the EU Emissions Trading System (ETS).²⁹

Low-income households that occupy these homes do not have the resources to invest in renovations. A range of social supports and safeguards are therefore needed to ensure MEPS do not create additional burdens or new challenges to housing affordability. This includes ensuring that deep renovation is made possible, well beyond the point that costs can be paid back through energy savings.

Funding, finance, practical support and outreach are all essential. Additional earmarking of EU funds specifically for the renovation of homes occupied by low-income, energy-poor or vulnerable citizens, including where relevant those living in social housing, and for the worst-performing homes will be necessary. The revenues from the existing EU ETS allowance auctions have already been identified by the Commission as a potential source,³⁰ and 100% of new revenues from any extension of carbon pricing to heating fuels should be ringfenced for renovation.³¹ Funding and appropriate forms of finance³² should be made available through local one-stop shops³³ that provide practical support and outreach and actively engage vulnerable households with offers of support.

Specific measures to protect housing affordability for tenants are also needed. These may include rent controls or caps, finance structured to follow the ‘golden rule’ — where repayments do not exceed realised bill savings — with subsidies to fill the gap,

²⁹ Thomas, S., Santini, M. & Sunderland, L. (2021). *Pricing is the icing. The case for a comprehensive policy framework needed to introduce carbon pricing in EU buildings sector*. Regulatory Assistance Project. (forthcoming)

³⁰ European Commission, 2020a.

³¹ Thomas et al., 2021. (forthcoming)

³² For examples of funding and finance suitable for low-income and energy-poor households see Portal, A., Kompatscher, A. & Clark-Foulquier, C. (2021). *Targeting energy efficiency renovation to improve housing conditions of the most vulnerable: Avoiding social risks and ensuring the benefits*. FEANTSA. https://www.feantsa.org/public/user/Resources/reports/Targeting_Energy_Efficiency_Renovation_Report.pdf

³³ BEUC The European Consumer Organisation. (2021). *How to make green and healthy housing affordable for all consumers*. A BEUC position paper. https://www.beuc.eu/publications/beuc-x-2021-019_how_to_make_green_and_healthy_housing_affordable_for_all_consumers.pdf

and warm rents,³⁴ all supported by landlord licensing. Standards themselves should be designed mindful of potential undesirable outcomes, such as distortions in building stocks that can exacerbate existing housing shortages. The social impacts of any MEPS must be monitored at the local level, in particular to avoid rent increases. Finally, broader consumer safeguards for renovation works, including quality assurance and redress, can support effective renovations and improved building performance.

Renovation and affordability

Innovative approaches to making energy renovation affordable and securing housing affordability should be further explored alongside large-scale funding for targeted renovation support. Examples include:

- Social rental agencies or local authority schemes that publicly fund renovations of privately owned homes. In return, the owner offers the home for social rent for a fixed period.
- Equity release and purchase-to-rent-back schemes that allow asset-rich but income-poor households to finance renovations.
- A range of empty homes initiatives, including self-help housing schemes that purchase or lease empty housing, provide training and construction qualifications for local people to undertake renovations and produce homes for households in need.
- Homeowner collaboration to arrange finance and organise efficiency works in multi-family blocks, as demonstrated in a Habitat for Humanity project in Eastern Europe.
- Toits d'Abord project in which Fondation Abbé Pierre supports the renovation of affordable housing, taking homes from the worst-performing classes to EPC 'A,' 'B' or 'C' and aiming to guarantee families a minimum income after housing costs.

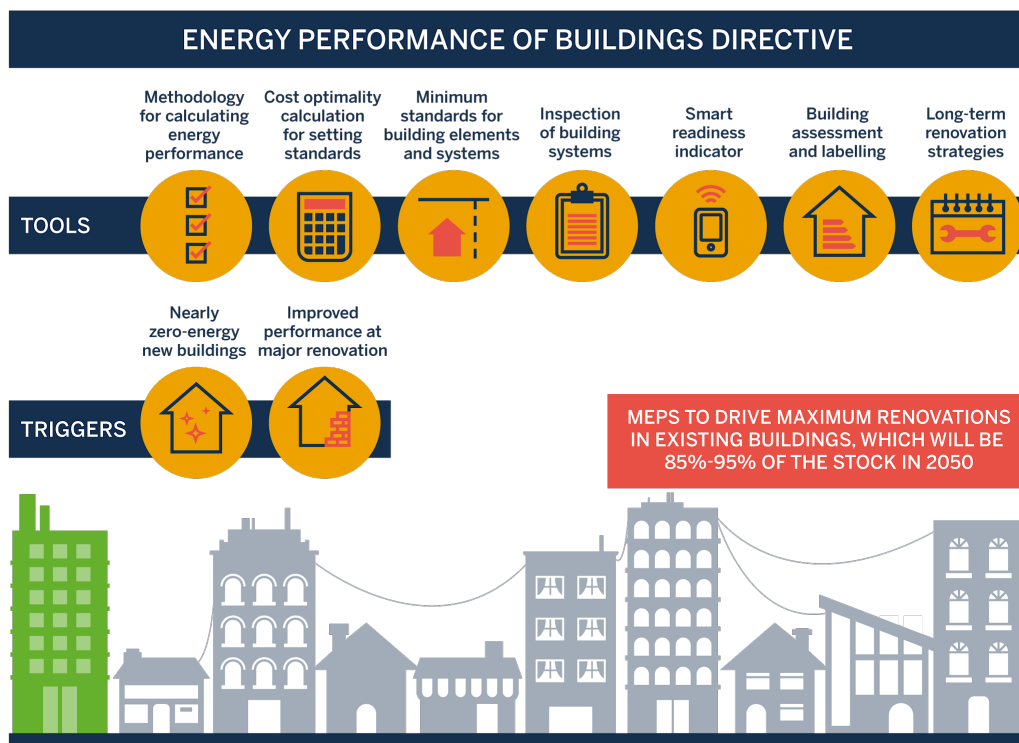
These and many more examples can be found in Housing Solutions Platform (2019).³⁵

◆ Increase the effectiveness of the existing renovation framework.

The introduction of MEPS into the existing European energy renovation framework has the potential to draw a common thread through existing provisions to tie them together. This would make each existing provision more effective and the entire package more coherent and, importantly, more impactful. As shown in Figure 2, current EPBD provisions have been useful to support the introduction of building codes and standards for new buildings but they do not effectively drive the necessary levels of building renovations.

³⁴ Thomaßen, G., Reutter, L., Langenheld, A. & Deutsch, M. (2021). *CO₂ emissions trading in buildings and the landlord-tenant dilemma: How to solve it. A proposal to adjust the EU Energy Efficiency Directive*. Agora Energiewende and Universität Kassel. <https://www.agora-energie-wende.de/en/publications/co2-emissions-trading-in-buildings-and-the-landlord-tenant-dilemma-how-to-solve-it>

³⁵ Housing Solutions Platform (2019). *50 Out-of-the-box housing solutions to homelessness & housing exclusion*. <https://www.feantsa.org/en/news/2019/12/11/hsp-publication-50-housing-solutions?bcParent=27>

Figure 2. Illustration of the EPBD and the role of MEPS

MEPS are not entirely new to the European policy framework for buildings. As of this year, all new buildings must be nearly zero energy. For existing buildings, the EED requires renovation of 3% of the floor area of buildings owned and occupied by central government each year and the EPBD requires energy performance improvements for all buildings at the trigger point of major renovation. The new sustainable finance taxonomy criteria introduce minimum standards that must be met by new buildings and the renovation of existing buildings in order to be compliant.

Introducing a more comprehensive and better communicated framework of MEPS can draw together these and other existing provisions to make the renovation framework more coherent, integrated and effective. MEPS is the missing piece that will create demand while making the most of other provisions, as illustrated in Table 3.

Table 3. How MEPS impacts or builds on elements of the existing energy renovation framework

Topic and legislation	Element of renovation framework	Why element is needed to implement MEPS	Why element will benefit from MEPS rollout	How to create additional synergies
Building decarbonisation objectives (EPBD)	LTRS and decarbonisation objective (Article 2a).	Supports stock mapping and prioritises segments. Sets out the national framework, defines priorities, national measures, financing and sets interim targets for 2030 and 2040.	MEPS triggers renovation activity to deliver on LTRS goals and milestones, making use of defined trigger points, addressing specific barriers and gaps.	Nearly-zero energy building standard for existing buildings or 'deep, renewable renovation' standard needs to be defined to guide renovations. Article 2a objectives for the whole stock to be better defined.
Existing MEPS-type provisions (EPBD and EED)	Minimum requirements for new buildings and major renovation, building element and system standards (EPBD). Renovation obligation for central government (Article 5 EED).	Establishes precedent for MEPS at European level. Implementation of extended EED Article 5 obligation on government stock can improve framework for renovation in advance of a more comprehensive MEPS.	Current provisions do not cover the majority of buildings or lead to systematic renovations. Provisions are not in line with LTRS objectives. Requirements to renovate only to cost-optimal levels are not in line with climate goals.	Ensuring consistency between major renovation requirements and MEPS, as well as between Article 5 EED and MEPS.
Information tools (EPBD)	EPCs. Other building information tools, including building renovation passports. One-stop shops and practical support.	MEPS can build on the EPC methodology already established. Current provisions provide important communication tools, metrics and verification data (EPC database).	MEPS justify investments into EPC improvements and accelerate their rollout. MEPS add value to the EPC framework and can make it more robust.	Reinforcing robustness, transparency and coverage of EPC. Building renovation passports and online repository are needed to provide more information, and route to full decarbonisation. One-stop shops expanded at local level.

Topic and legislation	Element of renovation framework	Why element is needed to implement MEPS	Why element will benefit from MEPS rollout	How to create additional synergies
Binding targets and obligations (EED, ETS, Effort Sharing Regulation)	Article 7 EED on energy savings obligation. GHG targets in ETS and Effort Sharing Regulation.	A large share of the EED energy savings obligation is achieved in the buildings sector. EED therefore supports the development of renovation programmes which can help enable MEPS compliance. ³⁶	MEPS make achieving obligations easier by guaranteeing demand for renovation and setting out a priority pathway for buildings sector decarbonisation.	Renewable heating and cooling provisions across EU framework should be improved, made more coherent, ambitious and made binding. ³⁷
Renovation finance (EPBD and national renovation finance schemes, taxonomy)	EPBD Article 10 on financial incentives and market barriers. The taxonomy criteria set minimum standards for the renovation of existing buildings.	Article 10 establishes use of the EPC as a compliance tool to determine if renovations achieve the energy performance improvements linked to finance provision.	MEPS drive a 'demand floor' to support scalability of finance mechanisms. Defining MEPS provides clarity for finance providers and investors on climate risk. MEPS that are comparable between Member States support the comparability of investments within the internal market.	European fund structured to support compliance with MEPS for low-income households and to incentivise renovations that go beyond compliance.

Designing a European obligation

The design for all examples of MEPS around the world is based on the three elements shown in Figure 3: the target stock, the standard to be achieved and the metric used to define it, and the date or trigger point at which the standard must be met.

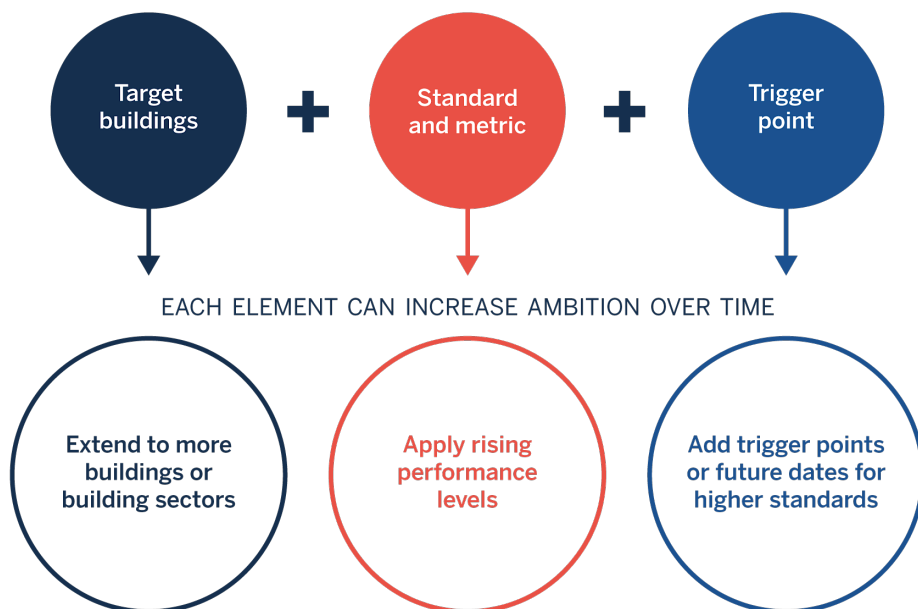
One approach to introducing MEPS across the EU would be to follow this formula and introduce a standard that applies in the same way across all Member States. This is akin to the approach assessed in 2016 when the European Commission considered a single-stage MEPS as part of the impact assessment for the previous revision of the

³⁶ Member States have achieved an important share of energy savings in the buildings sector. In the first commitment period, which ran from 2014 to 2020, they expect to have delivered at least 42% of the savings through policy measures focusing only on buildings. Many further energy savings in the buildings sector are expected from 'cross-cutting' policy measures, such as energy efficiency obligation schemes. Santini, M. (2021). *Energy Efficiency Directive 3.0: Can "metered savings" approaches support EU's Renovation Wave objectives?* (forthcoming)

³⁷ Sunderland, L., Santini, M. & Rosenow, J. (2021). *Fit for 55: Aligning European policy for decarbonised heat in buildings*. Regulatory Assistance Project. (forthcoming).

EPBD.³⁸ This section explores the viability and impact of taking this approach and highlights some lessons to be learned from exploring different choices of target buildings, standards and trigger points.

Figure 3. Elements of MEPS policy design



Target buildings

The makeup of national building stocks is far from homogenous across the EU. The split between residential and non-residential buildings, the types of buildings and uses, the ownership and tenure status all differ significantly. A MEPS that targets just one sector or subsector of the building stock would therefore impact countries in vastly different ways. Some countries would miss out on significant benefits. Furthermore, as some Member States have already introduced MEPS in both domestic and non-domestic sectors, it would be impossible to choose a single sector that would not disadvantage an early adopter.

Residential buildings make up 75% of the EU floor area, with non-domestic buildings making up the remaining 25%. Public buildings make up a very small share of non-domestic buildings in the majority of Member States.

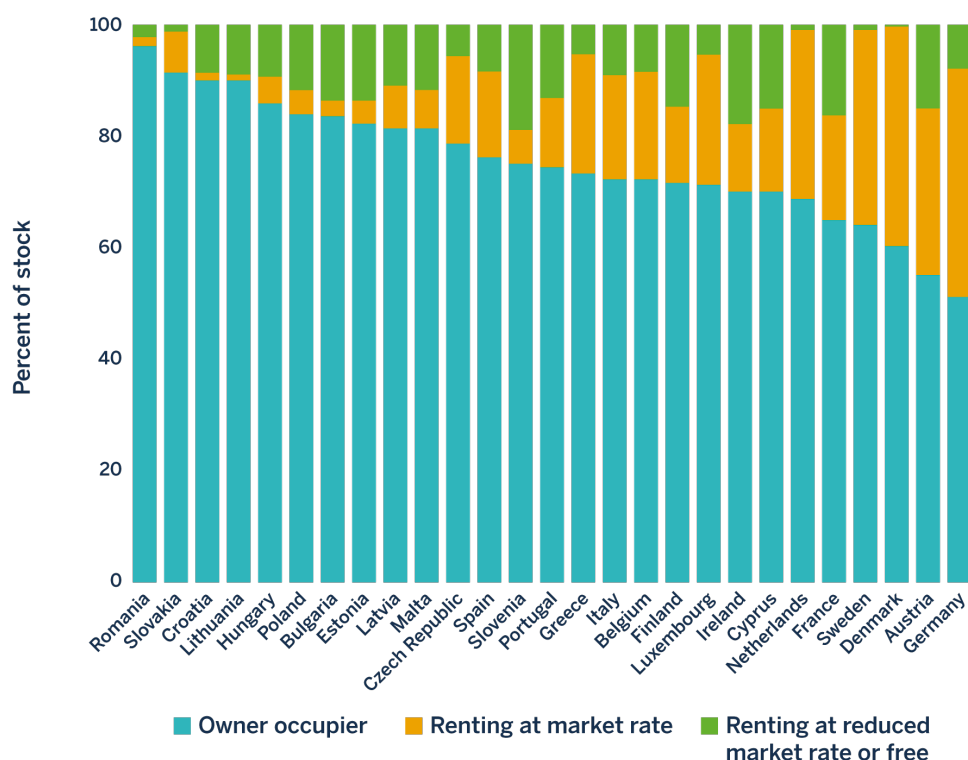
Given that residential buildings make up three-quarters of the floor area, it is important for a MEPS to include these buildings to be sufficiently ambitious. Excluding residential buildings this decade would negate the huge potential for MEPS to alleviate energy poverty.

Identifying a subset of residential buildings based on tenure is a route taken by many national policymakers but could be problematic at European level. Although at least 50% of homes are occupied by the owner in almost all countries, numbers of both

³⁸ The impact assessment evaluated the introduction of a simple, one-stage minimum requirement for the whole of Europe to renovate the worst buildings (e.g., EPC classes F and G) at the point of sale or rent, for both domestic and non-domestic buildings. European Commission. (2016). *Proposal for a Directive of the European Parliament and of the Council amending Directive 2010/31/EU on the energy performance of buildings*. Commission staff working document: Impact assessment. https://ec.europa.eu/energy/sites/ener/files/documents/1_en_impact_assessment_part1_v3.pdf

privately and publicly rented homes differ significantly. Some countries have almost no rented housing whereas in other countries, this tenure makes up a large proportion of the stock, as shown in Figure 4.³⁹ Introducing a MEPS that targets a specific tenure presents a further challenge as it may risk creating distortions and potential shortages of supply in one tenure as homes may be sold from a regulated sector into an unregulated sector to avoid the regulation.⁴⁰

Figure 4. Distribution of population by tenure in the EU (2018)



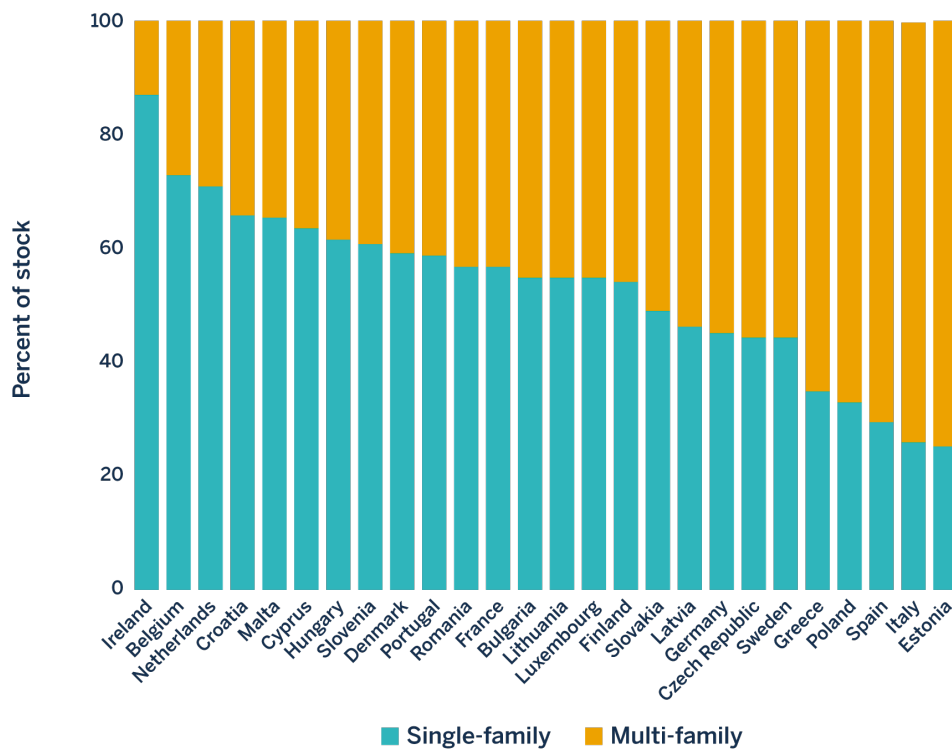
Source: Eurostat

Targeting one type of residential building — for example, a standard that targets large buildings would include multi-family but not single-family homes — would create similar discrepancies between countries, as the proportion of single-family homes and multi-family buildings also varies significantly, as shown in Figure 5.⁴¹

³⁹ Eurostat. Distribution of population by tenure status, type of household and income group - EU-SILC survey https://ec.europa.eu/eurostat/databrowser/view/ilc_lvho02/default/bar?lang=en

⁴⁰ This was a concern expressed at the introduction of the standard for rented housing in England and Wales. Evaluations of the policy have not identified churn resulting from the MEPS. The standard in England and Wales is at a relatively unambitious level of EPC 'E' and greater risk of stock distortions may be present with more ambitious standards. Department for Business, Energy & Industrial Strategy. (2019). *Evaluation of the domestic private rented sector minimum energy efficiency standard regulations: interim report*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/922799/prs-meess-interim-report.pdf

⁴¹ European Commission. (n.d.-a). *Building Stock Observatory factsheet on building stock characteristics*. Note: Data for Austria is not available. https://ec.europa.eu/energy/eu-buildings-factsheets_en

Figure 5. Distribution of single-family and apartment buildings (residential) in the EU

Source: EU Building Stock Observatory factsheet on building stock characteristics.

In the non-domestic sector, wholesale, retail and commercial buildings make up around 50% of the European floor area⁴² but, once again, the division of buildings by subsector varies by country as shown in Figure 6.⁴³

There are also large discrepancies in the size of buildings within national stocks, making a MEPS that targets only the largest buildings, as per the examples from the United States, unsuitable. The study of the European building stock by BPIE finds that “policy measures applied only to non-residential buildings over 1,000 m² in floor area would miss a substantial portion of buildings in many countries.”⁴⁴

Finally, public buildings make up a very small proportion of the overall floor area in Europe. Public offices make up just over 2% of floor area, as shown in

Figure 6, but the sector also extends to publicly held schools, health and leisure facilities. Article 5 of the EED addresses the renovation of public buildings and the Commission proposes to strengthen this requirement as part of this year’s revision of the Directive. For homes, the BPIE study of the building stock carried out in 2011 found that up to 20% of the EU housing stock was in public ownership, although some countries have no publicly owned housing. Social housing across Europe is characterised by a number of different public, private non-profit or limited profit, cooperative and other ownership structures, and there has been an increasing trend

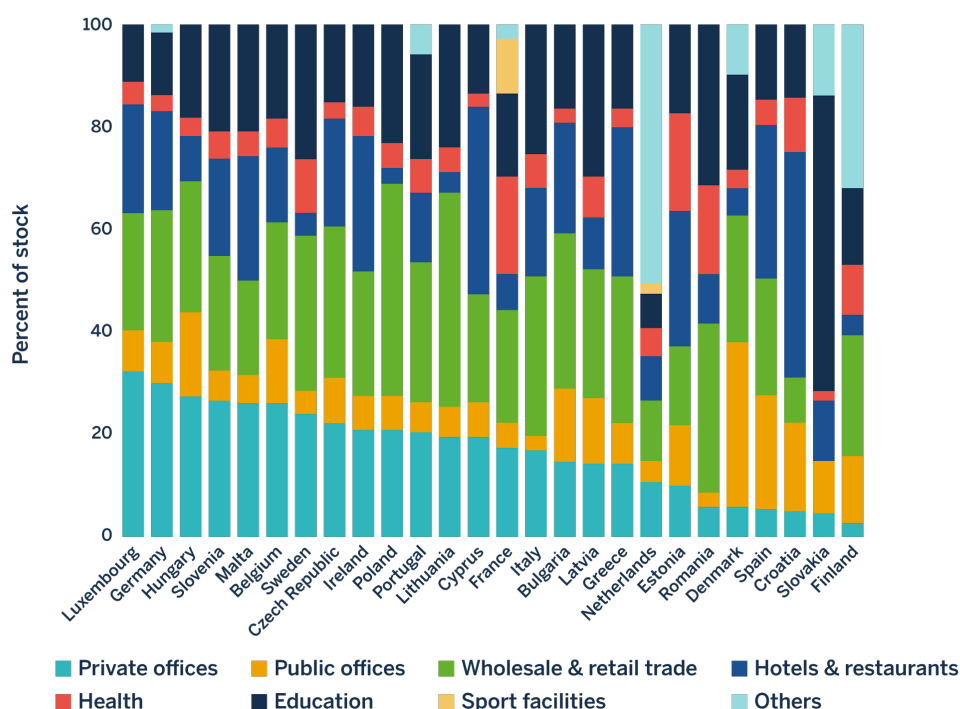
⁴² BPIE. (2011). *Europe’s buildings under the microscope: A country-by-country review of the energy performance of buildings*. https://bpie.eu/wp-content/uploads/2015/10/HR_EU_B_under_microscope_study.pdf

⁴³ European Commission, n.d.-a. Note: Data for Austria is not available.

⁴⁴ BPIE, 2011.

towards non-public ownership of social housing. Targeting publicly owned housing would therefore be problematic and risk creating distortions within the social housing sector.

Figure 6. Distribution of non-residential floor area by use (2013)



Source: EU Building Stock Observatory factsheet on building stock characteristics.

Key conclusion on the target buildings: A European MEPS that prescribes a specific subsector of the building stock will have vastly different impacts in different Member States. For MEPS to make a suitable contribution to 2030 and 2050 goals and deliver significant social benefits, the standards should include the residential sector this decade. Although non-domestic buildings are only a quarter of the stock, this sector contains individual buildings that are high energy users. An ambitious standard addressing this smaller sector could therefore also contribute to swift energy and carbon reductions. Limiting the first stage implementation of the new MEPS framework to public buildings, which account for a small proportion of the European floor area, risks wasting essential time this decade. Overlaps of obligations under the EPBD and the EED on public buildings should be avoided.

Metric and standard

In 2002, the EPBD required Member States to introduce EPCs — a certification system of the energy performance of buildings to make it possible for building owners and occupiers to assess and compare building performance. Member States have therefore been rolling out, and in some cases revising and improving, the EPC for the best part of 20 years. The increase in coverage of EPCs over time has also generated data on stock performance. EPC class is therefore the obvious choice as a metric to communicate MEPS to building owners.

Making the EPC fit for a new purpose

Despite the fact that EPCs were not originally designed as a tool for checking and confirming compliance with a regulated standard, the EPC has already been adopted for this purpose in a number of European countries.

For the EPC to perform this new function, the quality, comparability and reliability of the assessment and certification framework in some Member States will need to be improved. The Commission has indicated an intention to strengthen the EPC framework as part of this year's revisions of the EPBD. EPC data and its accessibility is also incredibly important. Coverage of the stock by EPCs varies considerably between countries — from over 40% of the stock in Ireland and 30% in the Netherlands, to less than 5% in a number of other countries. Although the EPBD does not mandate the creation of an EPC register, almost all Member States collect EPC data in databases voluntarily,⁴⁵ but not all of these databases are open, accessible and transparent.⁴⁶

For an EPC to be used to prove compliance with a MEPS, EPC coverage will need to be expanded quickly to all of the target stock before the compliance date. Jurisdictions introducing MEPS have addressed this in different ways: Flanders required that from 2015 all large non-domestic buildings must have an EPC in advance of the enforcement of a MEPS from 2030,⁴⁷ whereas the Netherlands requires building owners to lodge an 'A' to 'C' class EPC before the MEPS deadline in 2023, thereby using the MEPS regulation itself to expand EPC coverage.⁴⁸

In their current form, most national EPCs are not well suited to illustrating the path for buildings to reach full decarbonisation. By design, EPCs assess energy performance not carbon performance, so a MEPS based on the EPC is likely to promote energy efficiency measures more effectively than fuel switching, demand-side response and heat storage measures. Deep energy savings are essential to any decarbonisation pathway and energy efficiency is important to reduce bills. To better promote full decarbonisation, however, some national EPCs also display a second carbon-based rating taking into account the carbon intensity of the fuel mix. In other Member States, separate policies encourage fuel switching, for example fossil-fuel boiler phase-outs.

Many national EPCs are asset ratings rather than operational ratings.⁴⁹ A MEPS based on an asset rating — one that compares the performance of buildings on a like-for-like basis — may be more appropriate, particularly for homes, than using an operational rating that also considers the occupancy and behaviours. This is particularly important when considering households suffering from energy poverty, many of whom ration energy. For these households with an artificially low energy use starting point, a MEPS based on the asset rating would ensure deeper renovation works are completed to meet a minimum standard. But to fully decarbonise the stock will require a greater focus on operational energy performance, operational carbon emissions and, over time, the

⁴⁵ European Commission. (n.d.-b). *Public EPC registers*. https://ec.europa.eu/energy/content/public-epc-registers_en; and European Commission, 2016.

⁴⁶ Volt, J., Zuhair, S., Schmatzberger, S. & Toth Z. (2020). *Energy Performance Certificates: Assessing their status and potential*. X-tendo H2020 project. https://x-tendo.eu/wp-content/uploads/2020/05/X-TENDO-REPORT_FINAL_pages.pdf

⁴⁷ Vlaamse Regering. (2020). *Long-term strategy for the renovation of Flemish buildings*. https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/long-term-renovation-strategies_en

⁴⁸ Sunderland & Santini, 2020b.

⁴⁹ Although some Member States include a combination of the two — e.g., Estonia, where for new builds EPCs are calculated as asset ratings whereas for existing buildings they are based on real consumption.

whole-life carbon and environmental footprint of building materials. Building renovation passports and the digital building logbooks that accompany them have the potential to significantly improve the level of information provided to each building owner on the route to full decarbonisation, including efficiency, fuel switching and demand-side response measures. Building renovation passports could also provide recommendations on the environmental impact of renovation products.

Accounting for lack of harmonised EPCs

With these improvements, the EPC may serve as an effective metric to define a national standard. Setting a single standard based on EPC class to be applied across the EU, however, is more problematic.

EPCs are not harmonised across the EU. Although most are based on an A-to-G scale, some use an expanded A-to-H or a reduced A-to-F scale and some include subclasses, for example A and A+ or B1 and B2. The energy performance that defines each EPC class – often expressed in kWh/m²/year primary energy – is not the same in each Member State and the width of the energy performance band for each class also differs. Furthermore, the way the performance is calculated differs between countries, so a kWh/m²/year defined in one country is not the same as in another country. Table 4⁵⁰ illustrates the different EPC classes and bands for a number of countries.

Table 4. Illustration of national residential EPC scales and energy performance bands (primary energy).

Portugal		Germany		France		Ireland		Estonia	
EPC class	kWh/m ² /yr	EPC class	kWh/m ² /yr	EPC class	kWh/m ² /yr	Building Energy Rating	kWh/m ² /yr	EPC class	kWh/m ² /yr
A+	≤ 25	A+	≤ 30	A	≤ 70	A	<75	A	≤ 120
A	26-50	A	≤ 50			(A1, A2, A3)			
B	51-75	B	≤75	B	71-110	B	75-150	B	121-140
B-	76-100					(B1, B2, B3)			
C	101-150	C	≤100	C	111-180	C	150-225	C	141-160
						(C1, C2, C3)			
D	151-200	D	≤130	D	181-250	D	225-300	D	161-210
						(D1, D2)			
E	201-250	E	≤160	E	251-330	E	300-380	E	211-260
						(E1, E2)			
F	≥251	F	≤200	F	331-420	F	380-450	F	261-330
		G	≤250	G	>420	G	>450	G	331-400
		H	>250					H	≥ 401

⁵⁰ Portugal: Neuza Rosa, ADENE, personal communication, 13 May 2021; Germany: Mellwig, P. (2021). *Gebäude mit der schlechtesten Leistung – Klimaschutzpotenzial der unsanierten Gebäude in Deutschland* [Worst-performing buildings – climate protection potential of unrenovated buildings in Germany]. IFEU. https://julia-verlinden.de/wp-content/uploads/2021/05/210505_ifeu-Studie_worst_performing_buildings.pdf; France: Ministry of Ecological Transition. (2021). *Le nouveau diagnostic de performance énergétique* [The new energy performance diagnostic]. https://www.ecologie.gouv.fr/sites/default/files/2021.02.15_ew_dp_dpe.pdf; Ireland: Department for Communications, Climate Action and Environment. (2020). Ireland's Long Term Renovation Strategy. https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/long-term-renovation-strategies_en; Estonia: The performance bands for each EPC class are differentiated by building type. The performance bands shown here are for the 120-200m² size band for single-family homes into which the average home falls. Minister of Economic Affairs and Infrastructure. (2015, 30 April). Regulation No. 36 *Requirements for the Issuance of Energy Labels and Energy Labels, Annex 3*.

Table 5 shows how the distribution of stock across the EPC classes also differs between countries. Defining a MEPS based on a target EPC class for all European buildings, or a subset of all European buildings, would therefore impact different Member States in very different ways. First, the standard would require renovation of a different proportion of the stock in each country and second, the energy performance improvement needed to move into a compliant EPC class would differ, as previously illustrated in Table 5.

Table 5. Distribution of residential stock in the lower EPC classes in selected Member States

Country	Percentage of stock below EPC E (or bottom two bands)	Percentage of stock below EPC D (or bottom three bands)
Finland	8%	38%
Netherlands	12%	22%
Ireland	15%	27%
Estonia (A to H)	20% bottom two bands (49% below EPC E)	49% (bottom three bands (71% below EPC D)
France	25%	44%
Portugal (A+ to F)	25% bottom two bands (9% below EPC E)	51% bottom three bands (25% below EPC E)
Flanders, Belgium	28%	41%
Germany (A+ to H)	30% bottom two bands (45% below EPC E)	45% in bottom three bands (59% below EPC D)
Sweden	32%	62%

The EPC is not the only tool available to define a European-level requirement to introduce national MEPS. Instead, the European framework may follow the ‘fleet target’ approach outlined in the models above. The target or ambition of the European MEPS framework could be defined in a number of ways, including percentage improvement in stock performance (energy or carbon), fleet average performance (energy or carbon) or percentage of stock renovated. Member States could then design national MEPS, probably based on EPC class targets, to deliver against the fleet target.

Key conclusions on the metric and standard: The EPC framework is a useful starting point for the definition of national MEPS but requires improvement. Setting one EPC class standard for all of the EU would be problematic. Defining a fleet target, to be achieved by nationally set MEPS, is an alternative approach.

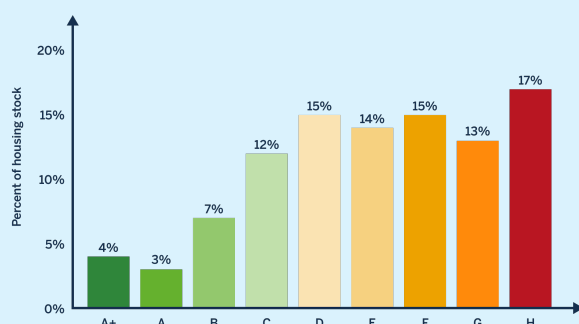


Potential impact of renovating the worst-performing homes

A recent study assessed the impact of renovating the worst-performing German homes to the Kreditanstalt für Wiederaufbau (KfW) 'efficiency house 55 standard'.⁵¹ 'Worst-performing' was defined in Germany's LTRS as the lowest two EPC classes, G and H, on the German A+-to-H scale. The efficiency house 55 standard requires the home, after renovation, to use a maximum of 55% of the primary energy requirement for that building type set out in the Energy Conservation Ordinance. This corresponds to an EPC class A or B, based on building size.

A very large proportion, 30%, of Germany's homes are in classes G and H, as shown in Figure 7, and they account for around half of the GHG emissions of the residential stock.

Figure 7. Distribution of German housing stock across EPC classes



Source: Mellwig, 2021.

Renovating these homes to the prescribed standard would deliver:

- GHG emissions reductions of 52-64 million tonnes of CO₂ equivalent, which is 40%-49% of residential emissions.
- Reductions in individual buildings' energy consumption averaging 77%-79%.
- Economically effective renovations of buildings with high energy savings potential and benefits of healthier internal environment, higher living standards and reduced costs.

This study considered the technical potential of renovating to this standard and recognised that renovations might be carried out in stages. To assess the policy impact of a MEPS at a point in time, it is necessary to factor in, on the one hand, the practical realities of exemptions and non-compliance that reduce impact, and on the other, the positive impact of the policy signalling effect and Germany's incentive framework, which is more generous for deeper renovations. A second study⁵² modelled the 2030 impact of a staged MEPS, requiring all buildings to be EPC E in 2030, EPC D in 2035 and EPC C in 2040, considering these real-world factors. It contributes:

- 166 PJ per year of final energy savings in 2030.
- Reductions of 11.5 million tonnes of CO₂ equivalent per year in 2030.
- €30 billion of GDP per year in 2030.

For context, the MEPS is calculated to achieve more savings than the carbon pricing mechanism introduced in 2019, which is assessed to create savings from the non-ETS sector of 7.7 million tonnes of CO₂ equivalent in 2030. It will also make a significant contribution to filling the gap between policies in place and the building sector 2030 climate targets, which is estimated as between 55 and 70 million tonnes of CO₂ equivalent in 2030.

⁵¹ Mellwig, 2021.

⁵² DENEFF, Fraunhofer ISI and Öko-Institut. (2021). *Weißbuch green recovery – Wirtschaft hoch, CO₂ runter* [Green recovery white paper]. https://www.effizienzrepublik.de/wp-content/uploads/2021/04/202104041_Weissbuch_Green_Recovery.pdf

Trigger point for compliance

The most common trigger point used in existing MEPS is a firm date by which target buildings must comply.

Natural or regulated points in the building lifecycle can be a useful additional trigger, often introduced earlier than the firm compliance date. Commonly used natural trigger points include sale, rent or major renovation.

The trigger point of sale, unlike rent, is common to all building types, but relying on this trigger point alone for the implementation of the European MEPS will not be enough to drive the scale of renovations needed, even under a deep renovation standard. On average, each home in Europe will be sold only once between now and 2050.⁵³ This average transaction rate overestimates the impact of the MEPS at this trigger, however, since it captures repeated sales of the same building, while other buildings will not be sold at all during the period. This means that even if every home was fully decarbonised at the next sale, this trigger point alone would not be enough to meet the 2030 and 2050 goals.

The box below illustrates the calculated impact of an EPC ‘E’ standard when applied at the trigger point of sale for homes in both Ireland and Portugal, based on national stock distribution across the EPC classes and annual rate of sale.

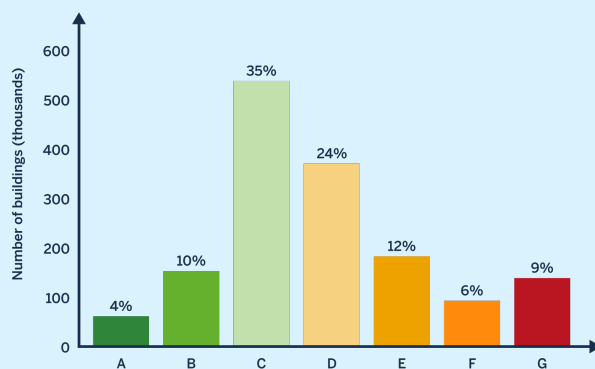
Illustrative impact in 2030 of an EPC ‘E’ standard for homes

Ireland

A Building Energy Rating (Ireland’s EPC scheme) E standard at sale only from 2025 triggers renovations in 1.75% of the housing stock by 2030, a renovation rate of 0.35% per year.⁵⁴ It would take 47 years to improve all homes to Building Energy Rating E.

Building Energy Rating E standard by a firm date of 2030 triggers renovations in 15% of the stock by 2030, a renovation rate of 3% per year on average between 2025 and 2030.

Figure 8. Distribution of Irish homes across the Building Energy Rating classes



Source: Central Statistics Office of Ireland. (2021b).⁵⁵

⁵³ Frequency of sales based on 221 million households in EU, 65% of homes are owner-occupied and approximately 5 million house transactions per year. Kruit et al., 2020.

⁵⁴ Central Statistics Office of Ireland. (2021a). *Residential dwelling property transactions (HPA02)*. <https://data.cso.ie>

⁵⁵ Central Statistics Office of Ireland. (2021b). *CSO statistical release: Domestic building energy ratings*. <https://www.cso.ie/en/releasesandpublications/er/dber/domesticbuildingenergyratingsquarter42020>;

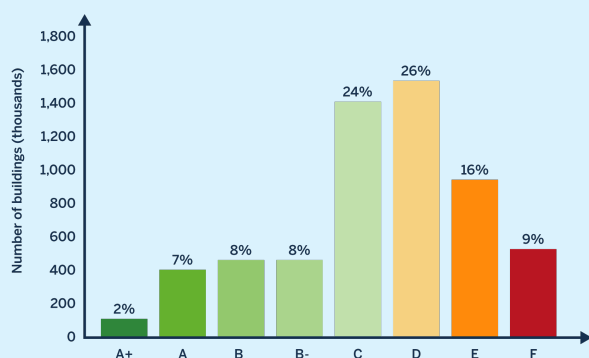
Portugal

The Portuguese EPC scale is A+ to F.

EPC E standard at sale only from 2025 triggers renovations in just over 1% of the housing stock, a renovation rate of 0.24% a year.⁵⁶ It would take 38 years to improve all homes to EPC E.

EPC E standard by a firm date of 2030 triggers renovations in 9% of the stock by 2030, a renovation rate of 1.8% per year on average between 2025 and 2030.

Figure 9. Distribution of Portuguese homes across EPC classes



Source: Portugal's Long-Term Renovation Strategy, 2020.⁵⁷

Under both models, the renovations would be shallow. Assumes equal distribution of sales across homes of different EPC classes.

Given the diversity of building types and uses in the non-domestic sector, it is not possible to estimate average rates of sale.

The trigger point of rental changes can be a useful tool to encourage renovations at void periods between tenancies. Estimations suggest that the average frequency of rental changes is higher than that of sale, with tenancies changing on average every 18 years across Europe,⁵⁸ although turnover is much higher in some countries. The structure of rental markets, the security of tenancies and therefore the frequency of turnover differs significantly between countries. For example, the average length of a domestic tenancy in Germany is around 11 years, compared to just 2.5 years in England.⁵⁹ Despite the high frequency of this trigger point in England, the MEPS for rented homes includes a firm date for full implementation following a phase-in period that utilised the trigger point.⁶⁰

⁵⁶ Instituto Nacional de Estatística (INE). (2014). *Construction and housing statistics*. https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_publicacoes&PUBLICACOESpub_boui=210767143&PUBLICACOESmodo=2

⁵⁷ Presidency of the Council of Ministers. (2021). *Resolution of the Council of Ministers no. 8-a / 2021 Long-term renovation strategy for Portugal*. https://ec.europa.eu/energy/sites/default/files/documents/pt_2020_ltrs.pdf

⁵⁸ Kruit et al., 2020.

⁵⁹ Davies, B., Snelling, C., Turner, E. & Marquardt, S. (2017). *Lessons from Germany: Tenant power in the rental market*. Institute of Public Policy Research. <https://www.ippr.org/files/publications/pdf/lessons-from-germany-jan17.pdf?noredirect=1>

⁶⁰ Standards that rely entirely on tenants to report non-compliant buildings should be avoided. The standard in England and Wales was enforced in its first two years (2016 to 2018) only through the 'tenant right to request' improvements in line with the standard. Consumer groups commented that relying on tenants to enforce the standard would be ineffective, given the power imbalance between landlord and tenant. Tenants could not be guaranteed to report non-compliant landlords for fear of retaliation and eviction.

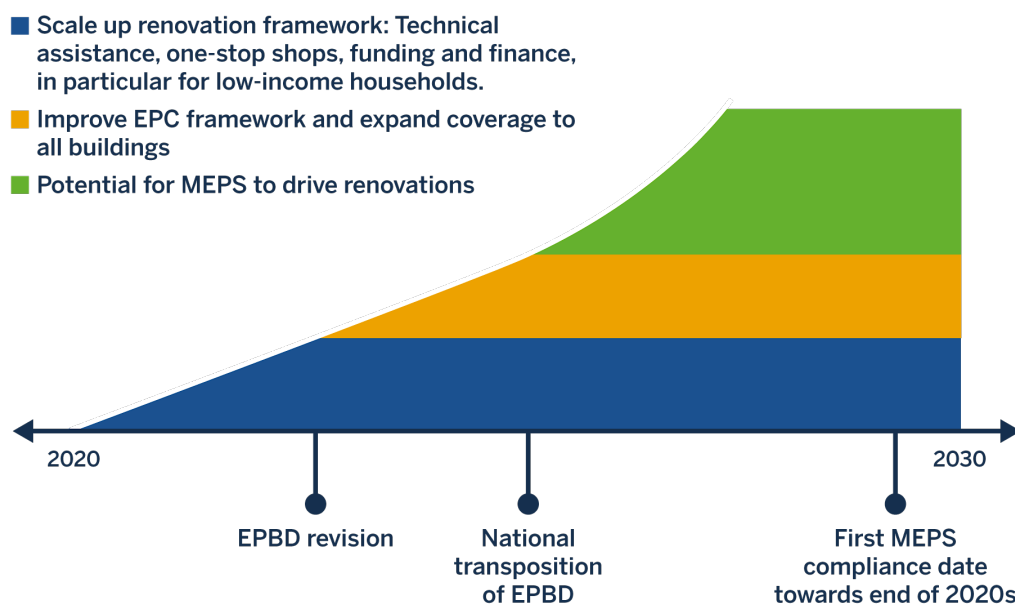
The sole use of transactional trigger points would be a missed opportunity for multi-family buildings. A 2018 report by the Joint Research Centre recognised that MEPS have an important role to play in overcoming the barriers to renovation of these buildings by aligning stakeholder interests.⁶¹ If the standard is only required at sale or rent of individual units, the opportunity is lost to promote collaboration of all unit owners in works carried out at the same time in response to the same policy signal.

Reliance on transactional trigger points alone risks creating an underclass of buildings that do not benefit from renovations. Sole use of transactional trigger points also means that the outcome of the MEPS policy is uncertain. The impact is subject to the vagaries of the property market, which fluctuates in response to a number of factors, not least economic downturn.

Transactional trigger points are a useful additional tool to drive activity in early years before a full compliance date. Rates of sale differ between countries, building types and locations, so the usefulness of transactional trigger points is best assessed locally. A firm date for compliance with the first-stage standard across Europe should be as early as possible, while allowing sufficient time for Member States to announce and communicate the new standard effectively. A compliance date towards the end of the 2020s at the latest seems likely in light of the legislative timeline and the urgent need to scale up building sector decarbonisation. Figure 10 illustrates the period before the first compliance date, which must be used to strengthen national and local renovation frameworks, introduce social safeguards and expand coverage of EPCs.

Key conclusions on trigger point and compliance: A European framework of MEPS should use firm dates for compliance rather than relying on trigger points alone. The first dates for compliance may be different for different sectors but should be no later than in the late 2020s.

Figure 10. Laying the foundations for the introduction of MEPS in the 2020s



⁶¹ Joint Research Centre. (2018). *Energy efficiency upgrades in multi-owner residential buildings*. European Commission. <https://publications.jrc.ec.europa.eu/repository/handle/JRC110289>

Proposal: A flexible framework of MEPS for Europe

The analysis above shows that a framework for MEPS introduced via the EPBD is a promising policy tool to deliver the EU energy renovation and social objectives. This section outlines a number of concrete recommendations.

The MEPS framework must be designed for maximum climate effectiveness and maximum social benefit in the form of energy poverty alleviation, lower household energy bills, improved indoor environments and job creation. It should send a powerful signal to the renovation supply chain to scale up. The design of the frameworks should allow flexibility for Member States to design nationally relevant policies that support existing approaches, particularly area-based approaches. It must be ambitious but robust and enforceable and facilitate easy translation into clearly communicable national standards.

Legislators should ensure that:

- ◆ **The EU MEPS framework aligns with 2030 and 2050 climate targets and uses compliance deadlines.**

While the Commission's impact assessment foresees a 60% GHG emissions cut in the buildings sector by 2030 (compared to 2015 levels), the buildings sector will need to fully decarbonise before 2050 for the EU to meet its climate-neutrality goal.

Legislators should design the MEPS obligation in view of fulfilling these goals.

Obligations to renovate at natural trigger points are useful policy tools but they will not on their own accelerate energy renovations in all Member States to the necessary level to meet 2030 and 2050 climate goals. Legislators should introduce compliance deadlines for minimum energy performance levels in the EPBD.

A first deadline in the late 2020s would secure activity during this decade, in line with the EU's goal to accelerate GHG cuts in the building sector. Such a deadline will not be sufficient to reach 2050 goals, and legislators should, at the outset, set out a clear pathway to ensure the full decarbonisation of the sector by 2050. Ambition must increase over time — either through tighter standards or by bringing more buildings under a standard.

- ◆ **The MEPS framework delivers maximum social benefits as part of strengthened EU and national policy frameworks.**

MEPS can be designed to deliver significant social benefits of renovation through the careful choice of target buildings, standard and timeline, especially when the standards are embedded within strengthened frameworks of financial and practical support and social safeguards. Legislators should earmark EU funds, including from the revenues of the EU ETS, for the renovation of homes occupied by low-income, energy-poor or vulnerable citizens, for those living in social housing where applicable, and for the worst-performing homes. Legislators should also direct funding and appropriate forms of finance through local one-stop shops that provide practical support and outreach and actively engage vulnerable households with offers of support. National authorities should design standards and the supporting framework mindful of potential

undesirable outcomes, introduce appropriate measures to protect housing affordability for tenants, and monitor the social impacts of these measures closely.

◆ **Additional measures incentivise maximum renovations before the compliance deadlines.**

The policy-signalling power of MEPS needs to be fully utilised to incentivise maximum renovations before the compliance deadlines. Clear and timely communication of the future standard, compliance required at transactional trigger points before the first compliance date and signposting to finance and practical support can be effective. In addition, legislators should build synergies between the MEPS measure and other obligations in the EU climate and energy framework, such as Article 7 of the EED.

◆ **The MEPS framework leads to deep renovations.**

The ambition of the MEPS provision depends to a large extent on the renovation level required. Deep renovation standards, in line with a 2050 climate-neutrality goal, present many benefits. They allow more energy savings to be made cost-effectively and they avoid lock-in into suboptimal renovations. If legislators do not opt for deep renovation standards, they should communicate the phased deadlines from the outset to encourage building owners to perform deep renovations in one step or to plan for a staged deep renovation. Progressive standards, as opposed to single standards, offer building owners visibility of the destination for their building and can help avoid suboptimal investments.

Legislators should ensure that deep renovations are defined in line with the climate-neutrality goal. Furthermore, they should consider that a MEPS based on the EPC is, in many countries, likely to promote energy efficiency measures more effectively than fuel switching, demand-side response and heat storage measures. To deal with this issue, one possibility would be to reform the EPC methodology, while retaining the ‘energy efficiency first’ approach. Another option would be to mandate fossil-fuel-equipment phase-outs through another legislative tool and keep the EPBD focused on energy performance.

◆ **The MEPS framework covers all segments of the building stock.**

The ambition of the EU provision depends on the portion of the stock subject to the MEPS measure. The analysis in this paper shows that including the residential sector in the obligation is important to deliver essential social priorities and goals. It also shows that setting a different obligation based on the tenure type can be distorting. Segmenting the stock and applying different deadlines might, however, be useful to enable the supply chain to scale up, and to take into account the availability of financing schemes and other supporting tools in the different building segments. Building stocks, performance levels and the maturity of the supporting framework will vary between Member States. The EU MEPS framework therefore needs to recognise the variety of situations and provide space for Member States to design appropriate measures at national level, while ensuring that large segments of the building stocks are covered. For example, legislators should consider that area-based approaches⁶² are some of the most cost-effective renovation routes, particularly when integrated with

⁶² Area-based approaches concentrate renovation activity in a locality, often delivering high levels of energy and carbon savings and combining energy-saving measures with system-level decarbonisation of heat through district heating upgrades and expansion or rollout of heat pumps.

the introduction or expansion of decarbonised heat networks or plans to phase out fossil gas. There are clear synergies between local decarbonisation plans, local enabling frameworks and compliance checking and enforcement of MEPS. The relationship between MEPS and area-based approaches needs further development to encourage first movers who have already rolled out plans. The Netherlands is one such first mover. The government has introduced an insulation standard intended to ready buildings for the phase-out of gas and connection to lower temperature heat. The gas phase-out is planned on an area-by-area basis and discussions are ongoing to decide at which triggers or dates the standard will be required for different building tenures.⁶³

◆ **EPCs act as a compliance tool and are further improved and rolled out alongside the MEPS implementation.**

EPCs are the established reference tool to assess energy performance at EU level. It is not desirable to spend significant time and policy effort to put in place an alternative methodology given the need to accelerate action now. As illustrated by the Netherlands, the MEPS regulation itself can be used to expand EPC coverage. Legislators should mandate the creation of accessible, online EPC databases, require full EPC coverage by 2030 and continue efforts to consolidate the EPC framework. These efforts will allow Member States and the Commission to use EPCs and EPC databases to check compliance with the MEPS provision.

◆ **The different impacts of an EU-level MEPS target on Member States are fully considered. A fleet standard may be more appropriate than a common EPC standard.**

An EU obligation to renovate buildings within, for example, the bottom EPC bands first would be very easy to translate at the Member State level and communicate to building owners and the supply chain. It would, however, have a different impact in the various Member States, as illustrated in this paper. If considering this option, legislators should further quantify this impact and check that the measure delivers sufficient social benefits and GHG cuts in view of meeting 2030 and 2050 climate goals. If this option were retained, legislators should include safeguards to ensure that Member States do not adjust the width of EPC bands or rebalance EPCs as a way to ease compliance.

An alternative is to require Member States to identify an energy performance level under which a given percentage of the national building stock is identified as ‘worst-performing.’ Member States would then introduce legislation to require these buildings to improve their performance level. This proposal would allow for a similar level of effort across the EU. It requires solid knowledge of the building stock upfront, and monitoring of its evolution over the reporting period through the EPC database. This data is missing or not openly accessible in many Member States. One solution could be for legislators to set up a mandatory methodology to model the building stock, based on existing data and on statistically relevant sampling. Our analysis did not investigate the appropriate percentage of the stock that could be defined as ‘worst-performing.’ The Commission’s impact assessment should look at the level required to send a strong signal to the supply chain and bring a meaningful contribution to 2030 goals.

⁶³ Minister of Homes Affairs and Kingdom Relations, 2021.

Another option to ensure flexibility could be to ask Member States to reach an appropriate average EPC or performance level across their building stock, by given deadlines. Such a fleet target would require a good knowledge of the building stock. If selecting this option, legislators should ensure that compliance can be checked. Fleet targets present the specific challenge of translating a stock average standard into a standard that is easily understood by each building owner and occupier. Legislation should therefore require Member States to translate the fleet target into accessible, sector-specific MEPS and clearly communicate these to building owners.

♦ **Additional measures are put in place to provide adequate information to building owners.**

Clearly communicated MEPS provide a valuable signal but on their own they are not sufficient to provide the adequate level of information required by building owners. At a minimum, all building owners should be furnished with a renovation roadmap, possibly as part of a building renovation passport. The renovation journey should include MEPS compliance and climate neutrality. A renovation passport could include information on the materials and products used to renovate, including information about embodied carbon and the environmental, health and safety impacts of those materials. An online repository could also store information about the operational performance of the building. The EPBD revision should include ambitious provisions on these points, guaranteeing that building owners will receive sufficient information.

♦ **National authorities are empowered to implement MEPS, including by considering state aid constraints.**

The Commission and other relevant EU institutions should dedicate sufficient resources to build up administrative capacity in Member States, in view of securing the rollout of the MEPS measure. This includes empowering national and local authorities to communicate the standard to building owners, establish inclusive renovation programmes, check and enforce compliance, and monitor impacts, including social impacts. Local authorities are named as the enforcement bodies for all existing MEPS examples reviewed. Local-level actors must therefore be resourced to integrate enabling with enforcement.⁶⁴

Depending on how the EU MEPS obligation is formulated, the impact of state aid guidelines on the availability of funding for renovations of buildings owned by organisations rather than individuals would need careful consideration. Under current rules, subsidies for renovations to meet a standard set at European level would only be available up to a year before application of the standard, or for renovations that exceed the standard.⁶⁵ This would mean public funds that will be essential to enable buildings in some sectors, not least the social housing sector, to comply would not be available in this critical period. This rule does not apply for standards set at Member State level. The proposed revision of state aid guidelines is an opportunity to address this barrier.

⁶⁴ This approach is being explored in England as part of MEPS enforcement pilots with local authorities. <https://www.cse.org.uk/projects/view/1360>

⁶⁵ European Commission. (n.d.-c). *Recovery and resilience facility – State aid*. https://ec.europa.eu/competition/state_aid/what_is_new/template_RFF_energy_efficiency_in_buildings.pdf; and Juliette Delarue, ClientEarth, personal communication, 5 March 2021.



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