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# ADDRESSING THE CLIMATE AND SOCIAL EMERGENCIES WITH MINIMUM ENERGY PERFORMANCE STANDARDS



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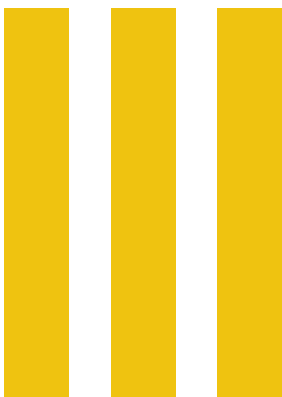
This autumn 2021, as the COP26 dampened hopes for ambitious global climate action<sup>1</sup>, soaring fossil fuel prices in the EU worsen energy poverty and highlight the need to speed up the clean energy transition<sup>2</sup>. **The upcoming revision of the Energy Performance of Buildings Directive (EPBD) gives the EU an opportunity to kill two birds with one stone, addressing both the climate and social emergencies.** The buildings sector is the single largest energy consumer in the EU, representing 40% of our energy consumption.

**EU climate objectives require a fully decarbonized building stock by 2050.** The success of building decarbonization rests on mass-deployment of existing techniques and products such as deep renovation methods, highly-efficient and renewable heating systems, insurance and financial products<sup>3</sup> for quality renovation.

**Yet, EU and national policy-makers have so far failed to scale-up energy efficient renovation rate and depth.** Despite growing awareness of the multiple benefits<sup>4</sup> of energy efficiency actions, most EU buildings remain energy inefficient. As part of its Renovation Wave Strategy<sup>5</sup>, the European Commission announced a revision of the EPBD in December 2021, five years ahead of the planned review. It is a unique opportunity for the EU to increase the quality of life of millions of Europeans.

The European Commission should use the EPBD revision **to introduce minimum energy performance standards (MEPS)**<sup>6</sup> to address the lack of information, create legal certainty and

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incentives for renovation. To solve the buildings' decarbonization challenge, the added value of EU coordination lies in bringing visibility to all stakeholders about the long-term objective (climate neutrality by 2050), and how to get there (decarbonization pathways). MEPS would require concerned buildings to reach minimum performance levels by a specified deadline or trigger point (e.g. sale or change of tenancy). It would guarantee that renovations result in buildings reaching minimum standards and allow links with public support and compliance, hence making sure that public incentives really translate into effective energy savings. **The ambition of such MEPS will depend on the target stock, compliance deadlines, and performance levels.**

This brief argues that **EU MEPS will be a key driver for a deep renovation market which has the potential to be a decisive contribution to both EU climate action**, by drastically reducing energy consumption and greenhouse gas emissions of the buildings sector, **and social justice**, by eradicating energy poverty<sup>7</sup>. To maximize benefits, MEPS should **cover all building segments** (public and private, residential and service) **and align with the long-term objective of a decarbonized building stock by 2050**. The particular focus of this paper is the residential sector, which accounts for 70% of buildings emissions but remains insufficiently addressed by EU and national policies.

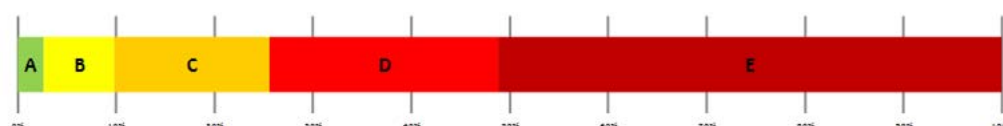
To start off, the brief explains the rationale and obstacles of scaling up deep renovation. It then turns to describing MEPS as a key tool to create a stable demand for renovation and to unleash the high potential to create synergies between EU climate objectives, increased well-being and social justice.

## 1 ■ SCALING UP DEEP RENOVATION OF RESIDENTIAL BUILDINGS TO TACKLE CLIMATE AND SOCIAL EMERGENCIES: RATIONALE, OBSTACLES, AND HOW TO OVERCOME THEM

### 1.1 ■ Climate and social emergencies

**The existing building stock, most of which (85% to 95%<sup>8</sup>), will still be standing in 2050, displays very poor energy performance** (figure 1). Full decarbonization by 2050 requires high energy performance (at least A or B label) of the entire building stock.

**FIGURE 1 ■ Distribution of the building stock in the EU per Energy Performance Certificates class**

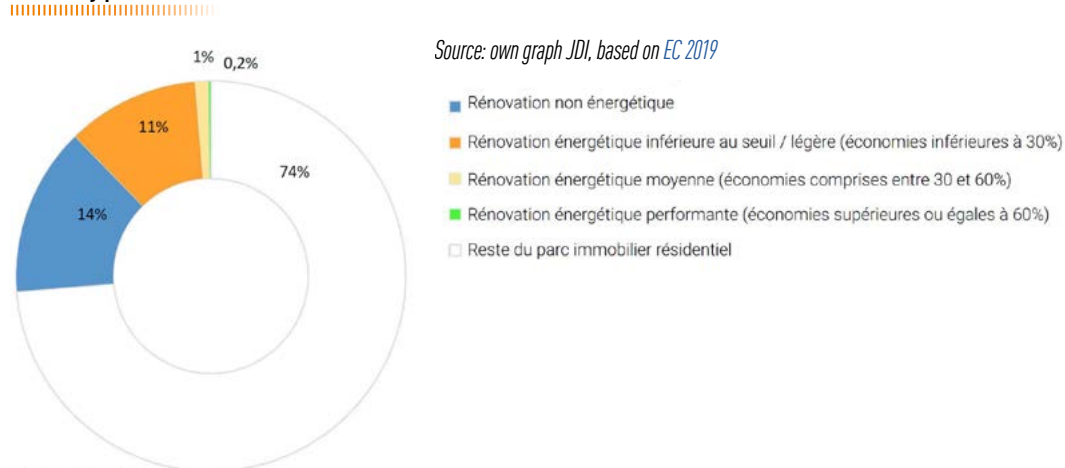


Source: [https://bpie.eu/wp-content/uploads/2017/10/State-of-the-building-stock-briefing\\_260tt\\_v1.pdf](https://bpie.eu/wp-content/uploads/2017/10/State-of-the-building-stock-briefing_260tt_v1.pdf)

**While the link between climate mitigation and large-scale deep-renovation is widely acknowledged by all levels of government in the EU, the majority of renovations undertaken in the residential sector today are not energy renovations** (see figure 2). Moreover, when energy renovations take place, they usually result in low energy savings.

Only 1% of renovations performed each year are deep renovations, representing just 0,2 % of the EU residential stock. This rate must be multiplied by 15 to reach 3% of the building stock deeply renovated annually, in order to reach the objective of a fully decarbonized building stock in the EU by 2050<sup>9</sup>.

**FIGURE 2 ■ Distribution of renovations undertaken on residential buildings in the EU each year, according to energy efficiency performance**

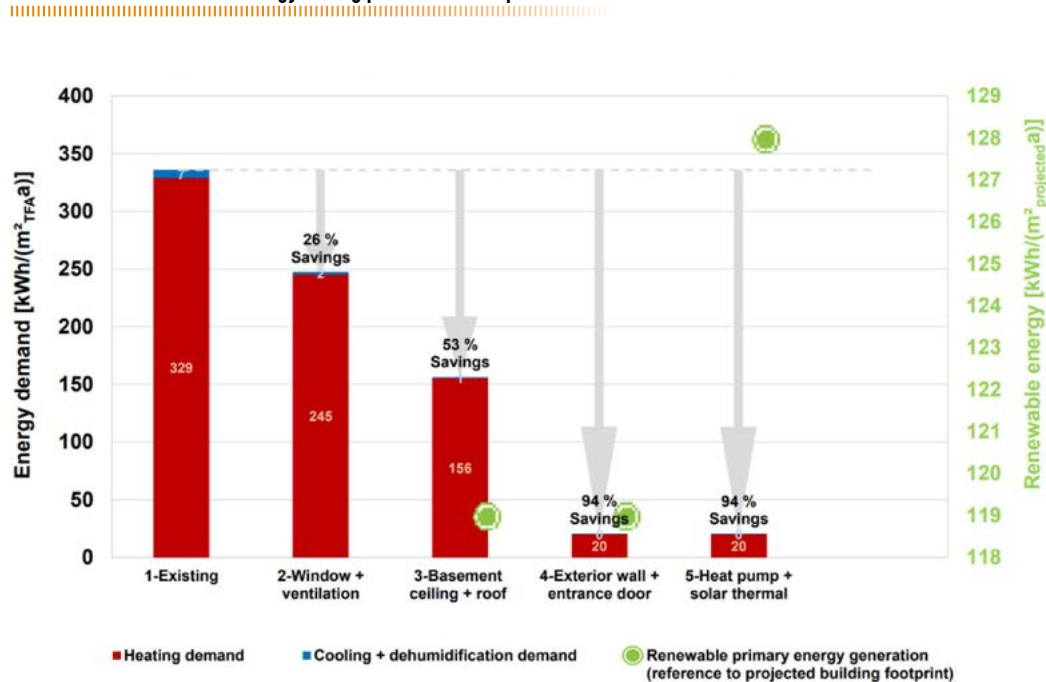


**Deep renovation allows to cut energy consumption by 60-90 %.**<sup>10</sup> To achieve such excellent performance, deep renovation involves works on the entire building: roof, air circulation, windows and doors, space and water heating systems, walls and floor<sup>11</sup>. Considering on-site or local renewable energy production, it can even mean making buildings produce more energy than they consume -so-called energy positive buildings<sup>12</sup>. Below is an example of what type of renovations every single dwelling should benefit from before 2050 (figure 3).

Source: JRC 2021. One-stop shops for residential building energy renovation in the EU.

Note: Figure 3 shows the different steps of deep renovation to reach a positive energy building (with renewable energy production on-site). It is not an "ideal renovation", it is rather an illustration of deep renovation. The most effective way to implement it is to perform all the steps at once (one-stage deep renovation), but implementation can be segmented in different steps (ideally no more than 3, to avoid coordination failures). In this case, buildings' components renovation may take place according to a different timeline than the one displayed here, and remaining heating needs can be decarbonized by other means than heat pumps (eg. decarbonized district heating systems for example).

**FIGURE 3 ■ Illustration of energy saving potential of deep renovation**



**Procrastinating on deep renovation has tangible social impacts.** 80 % of the energy consumption of buildings in the EU stem from water and space heating, whose supply is still dominated by fossil fuels. Before the covid pandemic, already 30 million Europeans were unable to keep their home warm in the winter. Soaring energy prices across Europe push vulnerable citizens further into energy poverty. In 2020, close to 100 million Europeans (22% of the population) were at risk of poverty or social exclusion<sup>13</sup>. Wary of potential social unrest and Yellow-Jackets-like protests, some Member States already announced measures to mitigate the energy bill increases: Spain slashed household energy taxes, Italy committed to subsidize most vulnerable citizens<sup>14</sup>, France froze regulated gas prices<sup>15</sup> and announced a one-off payment of 100 euros for 38 million citizens<sup>16</sup>. While these measures, representing about 10 billion euros<sup>17</sup>, are needed to cushion the short-term impacts of the ongoing “gas shock”, they will be far from enough to alleviate the full impact of the price increase, estimated at 100 billion euros<sup>18</sup> this winter.

**The only sustainable answer to the climate and social emergency in the building sector is to exit the current wasteful fossil-based energy system by scaling-up deep energy renovation<sup>19</sup>.**

## 1.2 ■ Obstacles and solutions

**Obstacles to deep renovation are informational, motivational, technical and financial.**

The residential sector ownership is highly fragmented, characterized by many small holders and sometimes requiring collective decisions. In the case of rented units, landlords see no benefits in energy savings, while tenants cannot invest in a house they do not own<sup>20</sup>. Lastly, deep renovation involves a complex series of contractual relationships, between the customer, energy auditor, various contractors, and financiers, characterized by asymmetric information. On the demand-side, owners lack a full understanding of renovation benefits, find it cumbersome and may lack access to long-term affordable financial products<sup>21</sup> to fund significant investments (typically 20.000 to 60.000 euros<sup>22</sup>) with long payback periods<sup>23</sup>. Hence they are prone to postpone major works. These barriers are particularly strong for low-income Europeans. On the supply-side, renovation involves multi-level collaboration, with complex and interdependent works: many disciplines are involved, multiplying risks of extra costs and failures. For contractors, the high cost for the clients and convincing them of the benefits are identified as the main barriers<sup>24</sup>.

**Solutions already exist to tackle these barriers.** One-stop-shops can provide “integrated solutions” as a service to homeowners, transforming the cumbersome process of renovation for non-experts into an attractive, easy-to-understand and trustworthy offer<sup>25</sup>. However, most energy renovations are still performed without the support of one-stop-shops, which only represent 5% of projects<sup>26</sup>. Industrializing energy renovation is a promising option to drive down costs and minimizing inconvenience for dwellers by reducing the time required for on-site works. Emblematic examples are Energiesprong projects<sup>27</sup>, which guarantee zero energy consumption over 30 years. After being successfully pioneered in the Netherlands, Energiesprong is now deployed in France, the UK, Germany and Italy<sup>28</sup>. Recent assessment estimates that 36% of the French housing stock could be renovated using the Energiesprong approach<sup>29</sup>.



**Socio-economic benefits of renovation scale-up.** The renovation market already weights 100 billion euros per year in the EU<sup>30</sup>. Achieving the Renovation Wave will require 275 billion euros of additional public and private investments annually up to 2030 -that's around 1.5% of the EU GDP. This would contribute to local employment, with 90% of contractors being SMEs or local artisans. The Commission expects the creation of 160 000 jobs by 2030<sup>31</sup>, but the potential could be much higher (2 to 4 millions) if a 3% renovation rate is achieved<sup>32</sup>. There is important training needs, since the construction sector already experiences a lack of skilled workforce: in a study on renovation barriers commissioned by the Commission in 2019, 60% of the surveyed contractors declared having difficulties to select the right technical measure<sup>33</sup>. Besides, scaling-up deep renovation will provide green investments opportunities for banks in dire need for greater alignment with climate objectives: only 8% of bank's balance sheets is aligned with the green thresholds set by the EU Taxonomy<sup>34</sup>.

Beyond energy bills savings, deep renovation would improve housing conditions of the 58 million Europeans living in a dwelling with a leaking roof, damp walls, floors or foundation<sup>35</sup>. Inadequate housing causes or contributes to many preventable diseases (respiratory, nervous system, cardiovascular, cancer)<sup>36</sup>, as well as productivity losses and reduced opportunities. Associated costs were estimated at 200 billion euros per year by the EU Agency for the improvement of living and working conditions<sup>37</sup>.

**Despite strong business potential for innovative concepts of one-stop-shops or industrialized renovation solutions, this proved difficult to scale-up, one of the main reasons being customer base uncertainty<sup>38</sup>.** Due to high fragmentation of the supply chain, the construction sector has a high inertia and is reactive rather than proactive towards policy. Hence, to align the construction sector with deep renovation needs, the most important policy action is to send a clear and predictable signal towards decarbonization of the whole building stock<sup>39</sup>. To do so, minimum energy performance standards to be achieved by a certain compliance date, working as renovation obligations, are the most effective policy tool<sup>40</sup>. Although the building sector is somewhat more complex than other sectors, past ecodesign requirements on minimum efficiency performance standards for appliances proved successful in driving efficiency in that sector<sup>41</sup>. Creating market certainty over future demand allow producers of high-quality insulation components to industrialize production as well as to prevent potential shortages, local artisans to upskill and hire additional workers, one-stop-shops to invest in marketing and advertisement to reach out new customers, banks to set up in-house expertise and appropriate financial products, like discounted mortgage rates in case of a good energy performance of the house<sup>42</sup>. Scale-up should be supported by stable government technical assistance, training, and funding programs, as well as other measures such as public subsidies, steadily increasing taxation of energy prices, and new policies targeting private banks, such as mortgage portfolio standards<sup>43</sup>.

**Setting up minimum energy performance standards (MEPS) for existing residential buildings in the EPBD revision is the strong signal the construction sector needs to get moving<sup>44</sup>,** provided that the MEPS framework is ambitiously aligned with climate neutrality and is coupled with credible monitoring and reporting requirements.

## 2 ■ AN AMBITIOUS RESIDENTIAL MEPS FRAMEWORK IN THE EPBD TO PHASE-OUT INEFFICIENT BUILDINGS: DESIGN AND ENABLERS

### 2.1 ■ Ambitious residential MEPS design

**The EU framework already features some minimum energy performance standards, although the scope is limited and performance levels insufficiently aligned with climate targets.** The Directive on Energy Performance of Buildings (EPBD) mandates that new buildings must be nearly zero energy from 2021 onwards. However, as 85 to 95% of the existing building stock will still be standing in 2050<sup>45</sup>, new buildings MEPS would only contribute to 5 to 15% of building stock decarbonization effort. Then, the EPBD also requires some energy performance improvements for all buildings undergoing major renovation<sup>46</sup> but decarbonization is limited<sup>47</sup> because required performance levels are determined through cost-optimal methodologies rather than climate-neutrality<sup>48</sup>. Besides, relying on the sole “major renovation” trigger point leaves out many buildings which would not undergo such works. Lastly, 3% of the floor area of central governments’ buildings must undergo renovation every year as per the Energy Efficiency Directive. However, while their renovation is relevant to lead by example and ensure visibility to the benefits of better isolation, public buildings represent a small share of the floor area (2%<sup>49</sup>).

**According to a study commissioned by the European Parliament<sup>50</sup>, boosting building renovation requires to set a clear vision and targets at the highest government level (i.e. the EU) covering the full range of building types** and prioritizing the worst performing buildings. The EPBD is the opportunity to address national policies lack of long-term commitment to deep renovation in the residential sector. For instance, France regularly missed its annual objective to renovate 500 000 houses, while the Italian tax incentive for renovation (“superbonus”) needs to be renewed every year, hindering long-term planning<sup>51</sup>.

**For an optimal signaling effect, MEPS design should be simple<sup>52</sup> and easy to communicate, ensuring that the EU reaches its 2030 target of slashing 60 % of emissions in the residential building sector, and a fully decarbonized building stock by 2050.** MEPS design must include a target stock, a target performance level (expressed in CO<sub>2</sub>/m<sup>2</sup> or kWh/m<sup>2</sup> or Energy Performance Certificates class), and a target compliance date.

First, the EPBD should clearly state that **the whole building stock should be fully decarbonized by 2050**. A definition of deep renovation (be it one-stage or multiple steps) should be introduced and taken as the unique long-term horizon of every single building, which should eventually reach high energy efficiency and decarbonized heating supply thanks to on-site or local renewable generation<sup>53</sup>. Given the diversity of the EU residential building stock across Member States, EU-level MEPS should not target specific subset of residential buildings (owner-occupiers or tenants, public or private) to avoid creating distortion and shortages, as well as to ensure that no countries misses out the benefits of renovation scale-up<sup>54</sup>. Another

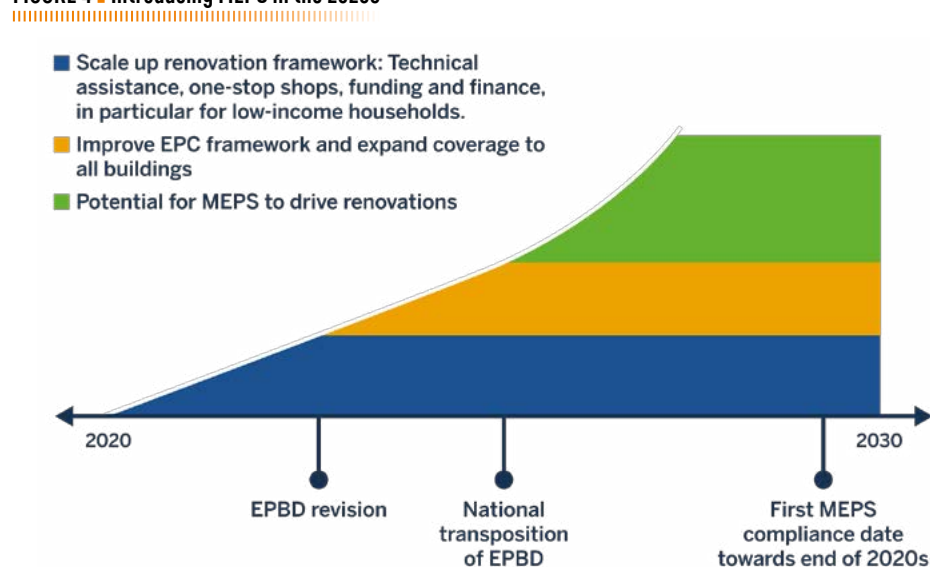
benefit of targeting the whole building stock is that it would contribute to keeping European legal compliance objectives simple and clear for all.

**Thus, EU MEPS must include the residential sector over this decade to maximize climate and social benefits of renovation<sup>55</sup>.** MEPS are a very effective tool to target worst performing segments of the building stock<sup>56</sup>, where the greatest savings can be achieved, and which are often inhabited by vulnerable families. MEPS can therefore be a progressive policy tool provided that adequate technical assistance, financial support and social safeguards are implemented.

**Strengthened Energy Performance Certificates can be one possible metric for setting the standard.** However, their methodologies differ from one Member State to the other and should be better harmonized in the EPBD. **Alternatively, the EU objective could be defined in terms of percentage of improvement** of stock performance (measured in energy and potentially complemented by carbon metrics), stock average performance, or percentage of stock renovated. Member States could then translate this EU objective into national MEPS<sup>57</sup>.

**Compliance dates must complement natural trigger points** like sale or change of tenancy, because some trigger points (e.g. the sale of a house) will only occur once between now and 2050, some buildings may not even face trigger points. In the case of multi-ownership buildings, trigger points may not even be very effective<sup>58</sup>. Because of the high inertia of the building sector, **first compliance dates should be set before the end of the decade**, to ensure minimum demand in the late 2020s while leaving time for the sector to ramp up solutions – typically 5 to 7 years<sup>59</sup> (figure 4)<sup>60</sup>. In particular, a key success factor of MEPS will be the increased roll-out of Energy Performance Certificates before compliance dates<sup>61</sup>. The EPBD should therefore include **a more harmonized Energy Performance Certificate framework should ensure enhanced coverage and quality of buildings' performance characterization**, with requirements for qualified experts across Member States, on-site visits of certifiers, stronger quality checks, and mandatory set-up of national Energy Performance Certificates databases<sup>62</sup>.

**FIGURE 4 ■ Introducing MEPS in the 2020s**



Source : Sunderland, L., Santini, M., 2021. Next Steps for MEPS: Designing minimum energy performance standards for European buildings. RAP.

**To reap the full climate and social benefits of MEPS, the EPBD should introduce a definition of worst performing buildings and MEPS ensure that Member States start with the lower end of their housing stock.** While MEPS should target the whole EU residential building stock, MEPS allow for prioritization of the worst-performing buildings. Prioritizing these buildings not only have the strongest climate impact, it also bears positive health and social benefits since low-income and vulnerable families are more likely to live in worst-performing buildings, which in turn strongly correlate with inadequate housing characterized by leaking roofs, damp walls, ect<sup>63</sup>.

## 2.2 ■ Supporting compliance of climate-aligned residential MEPS

**Social safeguards ensuring affordability of renovation for all**, especially vulnerable owners and tenants, should come along MEPS introduction. First, low-income building owners should benefit from affordable technical assistance<sup>64</sup> and appropriate financial support. At the EU level, the proposed Social Climate Fund should prioritize the uptake of deep renovation targeted at the most vulnerable households living in worst performing buildings<sup>65</sup>. Renovation should not worsen housing exclusion, which is particularly significant in urban areas where people end-up living in low quality housing. In 2019, one in ten Europeans were spending more than 40% of their income on housing<sup>66</sup>. Social safeguards should prevent landlords to raise rents beyond actual energy savings, especially when the landlord benefit from a public grant to finance works. Such provisions have been implemented in Germany (although with room for improvement<sup>67</sup>) and in social housing in France. When social safeguards are rather of national or local competence, the European Commission should highlight best practices such as capping the rent increase after renovation works, incentives for one-stop-shops to set up specific outreach, free energy audits and affordable offers for vulnerable households and energy poors.

Besides, the European Commission should request Member States to monitor impacts of MEPS on housing stock and energy poverty, energy costs and rents, and potential housing shortages<sup>68</sup>. This could be supported by new requirement of yearly Eurostat data collection on renovation rate and depth.

**A strengthened regulatory framework will allow better efficiency of EU and national funding and technical assistance**, which should be linked to MEPS compliance. Credible monitoring and reporting mechanisms would strengthen the uptake of the MEPS, for example by making EU and national funds conditional (partly or in full) to MEPS compliance, including to finance technical assistance and capacity building programmes for national and local authorities or the establishment of one-stop-shops. Roll out of individual building renovation roadmaps (“Building renovation passports” established following a thorough energy audit) and technical assistance have been estimated at 2.6 billion euros per year over the 2020s<sup>69</sup> in the EU.

Total yearly public investment needs for the Renovation Wave have been estimated at 90 billion euros per year until 2030<sup>70</sup>, “only” 0.6% of EU GDP. As a comparison, Germany estimated the cost of the COVID pandemic at 34% of its GDP<sup>71</sup>, while France is expected to spend 18% of its GDP over the 2020 – 2023 period on covid 19 recovery measures<sup>72</sup>, the majority of which will not have the transformational impact expected from the Renovation



Wave leading to massive job creation and the reduction of the European dependence on costly imported fossil fuels.

**Next to technical and financial support schemes are set up, Member States should introduce penalties** applying to buildings owners that would fail to comply with MEPS requirements. It could be either monetary (fines), as in the cases of English and Wales MEPS, or operational (not being able to use the building until compliance is achieved), as in the case of French MEPS<sup>73</sup>. It could also take the form of a bonus-malus scheme, whereby fines collected are recycled for compliance. Local authorities should be appropriately staffed and trained to support enforcement of MEPS<sup>74</sup>.

**Beyond requiring improved alignment of public spending, the MEPS framework will be a powerful tool to redirect private finance towards MEPS compliance, for example by introducing Mortgage Portfolio Standards** requiring all mortgage lenders to improve the average energy performance of their mortgage portfolio aligned with the MEPS framework requirements and the long-term objective of climate neutrality by 2050<sup>75</sup>. MEPS will send a clear signal that non-compliant assets risk losing value. Hence lenders, investors and insurers will start factoring that risk<sup>76</sup>. Including Mortgage Portfolio Standards in the EPBD would be transformative since it would require the largest financial stakeholders in the European buildings (7000 billion euros lending against residential property in aggregate) to offer financial products incentivizing energy efficiency measures in the homes of their 50 million customers, and to value high standards when acquiring properties<sup>77</sup>.

**Lastly, to maximize the signaling effect of MEPS, the EU and Member States should clearly communicate about the standards**, and make renovation desirable through communication campaigns. Guidance documents should be issued for landlords and owners concerned by the MEPS, providing information about the requirements, funding options, penalties for non-compliance and success stories<sup>78</sup>. One-stop-shops could be good platforms for that purpose, such as Oktave in Grand-Est (France) or Superhomes in Tipperary (Ireland).

## CONCLUSION AND POLICY RECOMMENDATIONS ■

**As climate action and calls for a just transition are becoming more pressing, an ambitious EU framework on minimum energy performance standards (MEPS) would play a decisive role to unleash the massive decarbonization potential of the building sector, while lifting millions of European families out of energy poverty and fostering the development of a new renovation industry in Europe.** MEPS would facilitate the prioritization of deep renovation for worst-performing buildings, which is a key target to unlock the climate benefits of the EU Renovation Wave. The renovation of worst-performing buildings is equally important to make the energy transition a just transition, since these buildings are more likely to be occupied by low-income or vulnerable families.

Such standards would also provide better incentives to start up a Renovation Wave in the building sector than the controversial project of a new carbon market on heating (the "ETS2"<sup>79</sup>). Standards would provide a more predictable pathway in favour of the progressive phase-out of inefficient buildings, and create the **customer base certainty required for the development of existing technical and financial solutions.**

To achieve EU building decarbonization targets, the deep renovation rate should be multiplied by 15 to reach 3% per year during the 2020s. The residential sector represents 75% of the floor area and about 70% of emissions, and must be included in the MEPS framework to maximize climate and social benefits of renovation. Setting up MEPS for existing residential buildings in the EPBD revision is the strong signal the construction sector needs to get moving, provided that the MEPS framework is aligned with climate neutrality, and coupled with credible monitoring and reporting requirements.

Therefore, the European Commission must propose a revised EPBD that includes:

- **Residential MEPS covering the entire residential sector have a clear objective of full decarbonization by 2050**, and are aligned with the objective of decreasing 60% greenhouse gas emissions by 2030. This to make sure that no house is left behind in the EU Member States;
- **Flexibility** that allows each Member State to adapt the MEPS to the specificities of their housing stock;
- **First compliance dates before the end of the 2020s for residential MEPS**, in addition to trigger points such as sale or change of tenancy;
- **A definition of worst-performing buildings** (potentially as a percentage of the national building stock) **to allow for prioritization of deep renovation of worst-performing buildings**, for example eradication of worst-performing buildings by 2028;
- **A definition of deep renovation aligned with climate neutrality** (aiming at highly efficient envelopes and decarbonized heating supply) to provide a unified long-term horizon for the entire residential building stock;
- **Credible monitoring and compliance mechanisms**, through independent control of compliance and enforcement of penalties for non-compliance, by making EU funds for renovation projects conditional (partly or in full) to MEPS compliance, and/or achieving a certain share of **deep renovation of worst-performing buildings** occupied by vulnerable households.

To maximize MEPS benefits, the EPBD revision should also include:

- A **more harmonized Energy Performance Certificate framework**, with harmonized requirements for qualified experts across Member States, on-site visits of certifiers, stronger quality checks, and mandatory set-up of national Energy Performance Certificates databases;
- Financial provisions to strengthen the signal to the financial sector, such as **Mortgage Portfolio Standards** requiring all mortgage lenders to improve the average energy performance of their mortgage portfolio aligned with the MEPS framework requirements and the long-term objective of climate neutrality by 2050<sup>90</sup>.

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