# 20 POLICY LEVERS TO DECARBONISE BUILDINGS IN EUROPE

Climate Bonds INITIATIVE

Prepared by the Climate Bonds Initiative

## Contents



## Climate Bonds Initiative

**The Climate Bonds Initiative** (Climate Bonds) is an international investor-focused not-for-profit organisation working to mobilise the USD100tn bond market for climate change solutions.

Climate Bonds promotes investment in projects and assets needed for a rapid transition to a low-carbon and climate-resilient economy. The mission is to help drive down the cost of capital for large-scale climate and infrastructure projects and to support governments seeking increased access to capital markets to meet climate goals.

# 1. Introduction

The launch of the Buildings Breakthrough initiative during COP 28 signalled a new era of international collaboration in the built environment. Jointly led by the Governments of France and Morocco, in collaboration with the UN Environment Programme (UNEP), its goal is to establish near-zero emissions and climate-resilient buildings as the standard by 2030. Although 28 countries have committed including Austria, Finland, France, Germany, the Netherlands, and Sweden, with support from the European Commission, this initiative serves as just a steppingstone towards achieving net-zero emissions by 2050.

In order to convert these pledges into rapid, credible, science-based action, the Laudes Foundation has supported Climate Bonds to develop resources and guidance for issuers of green bonds that facilitate the transition of their building assets to net zero. This funding has supported the launch of the Climate Bonds Low Carbon Buildings Criteria 2.1, outlined in Figure 1.

While the tools and technologies for achieving the Buildings Breakthrough are available, their effectiveness relies on support from an enabling policy environment. Policymakers need to make decisions about how to make the best use of public finance as well as draw in private capital. In addition to engaging investors and mortgage lenders, they need to design a stable policy environment, making effective use of their urban planning and regulatory powers. Therefore, substantial efforts are required from stakeholders at all levels of government to align and work collectively towards achieving a low-carbon built environment.

Buildings account for approximately two-thirds of the world's hard assets, and mortgages account for almost EUR9tn on European bank balance sheets so funding the buildings transition to net zero will come from a range of sources.[1] While public money will continue to play a large part through grants and loans, in addition to tax incentives for energy efficient renovations, private sources of capital including green bonds, mortgages, private equity, blended finance and equity loans can play a vital role.[2] Of these, the global green property bond market in particular has been a notable success story. In the USD4.2tn GSS+ bond market at the end of 2023, 21.5% of deals had some type of buildings-related Use of Proceeds.[3] The continued growth of this market is imperative to attract the investment required by 2050 to deliver a built environment that is future-fit, low carbon, energy-efficient, safe, and resilient.

Within the extensive policy framework for promoting renewable energy and enhancing building energy performance across the European Union (EU), much legislation has been revised recently to provide a better picture of how the EU will achieve an emissions reduction of 55% by 2030, compared to 1990 levels. However, with the European Commission recommending a 90% reduction in emissions by 2040, this momentum needs to be maintained into the future. This report aims to set out a range of policy options across three levels: the EU, Member States and Cities and Regions, which will help to embed regulation and make it more effective in practice.

## A high level summary of the Climate Bonds Low-Carbon Buildings Criteria

Climate Bonds has developed definitions for what constitutes a green activity or investment to facilitate bond issuance and market screening methodologies that monitor and record issuances across the full spectrum of labels (including Green, Social, and Sustainability-Linked). These indicate the pathway to raising capital to support decarbonisation in various sectors and hard- to- abate industries.

First launched in 2012, the Climate Bonds Low-Carbon Buildings Criteria were revised in 2023, notably to create a set of criteria for new buildings, marking a significant milestone. These Criteria bring several noteworthy advantages:

- **Enhanced clarity** regarding the utilisation of the Criteria for new buildings, making it easier for stakeholders to understand and adhere to the Standards.
- **Technological advancements**: By including new buildings, these Criteria leverage the latest technological capabilities available in the construction industry, promoting innovation and sustainability. New buildings under the Criteria must not generate energy from fossil fuel sources, and will have requirements around EV charging infrastructure.
- **Expanded typology coverage**: Recognising that not all building typologies were previously addressed in the Climate Bonds Low- Carbon Buildings Criteria, the update aims to bridge gaps and ensure that a broader spectrum of building typologies and projects can meet these essential sustainability benchmarks.
- **More than Energy Efficiency**: Determining the extent to which a building is green has historically focused on Energy Performance Certificates (EPC), but has now further been expanded to incorporate the embedded 'Whole Life Carbon', (WLC) of a building asset.
- **EU Taxonomy**: Achieving Certification with Climate Bonds ensures that the building stock is considered in line with the EU Taxonomy requirements and achieves the following;
  - **Substantial Contribution** to (1) climate change mitigation, and
  - **Do No Significant Harm (DNSH)** for the remaining five objectives (viz. (2) climate change adaptation, (3) sustainable use and protection of water & marine resources, (4) transition to a circular economy, (5) pollution prevention and control, and (6) protection and restoration of biodiversity and ecosystems).

# 2. Context

**Over a third of the energy-related emissions reductions needed globally by 2050 are in the built environment**. Buildings play a significant role in our lives as homes, places of work, commercial spaces, transport hubs, recreational facilities, schools, hospitals, and more.

Europe also has some of the oldest building stock in the world with approximately 65% built before 1980.[4] The Building Performance Institute Europe (BPIE) estimates that over 97% of the region's building stock requires renovation to align with net-zero targets by 2050.[5] **This gives the decarbonisation of buildings the same degree of urgency as any of the hard-to-abate industries**.

Green bonds and loans are already funding the construction and renovation of buildings in the EU, helping them to become more efficient, low-carbon, resilient, and comfortable. A range of property owners and investors are active issuers of sustainable financial instruments, including mortgage banks, housing associations, real estate investment trusts (REITs) and municipal housing authorities. However, additional policy interventions that emphasise the implementation of robust Minimum Energy Performance Standards (MEPS) across all EU Member States are required. A key lever for Member States to achieve their MEPS target is to set out their science-based pathway for reducing emissions from the built environment, with significant staging posts at 2030 and 2040.

The model for a net-zero future in the built environment should follow the SER (Sufficiency, Efficiency, Renewables) framework set out by the IPCC.[6] This consists of:

i. avoiding the demand for energy and materials over a building's lifecycle through circularity and demand-side responsiveness (sufficiency);

ii. enhancing the energy efficiency of building materials and appliances (efficiency) and;

iii. generating renewable electricity for essential functions such as space and water heating, cooling, cooking, and lighting (renewables).[7]

**There are approximately 131 million buildings in the EU but only 1% of buildings are renovated for energy each year.**[8,9]

This slow rate of renovations means that each opportunity to improve the energy efficiency of a building needs maximising, with the lowest possible lifecycle carbon impact, to avoid locking-in inefficient technologies. The European Commission is targeting a doubling of the rate by 2030 in order to boost the number of renovations.[10] The Energy Performance of Buildings Directive (EPBD), will initiate renovations according to the MEPS framework and national trajectories. It is important that these renovations are ambitious enough to align with the EU Taxonomy, which would incentivise financial institutions to offer suitable renovation products and green mortgages.

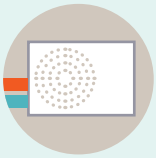
**Governments can help to make heat generated through electricity, from heat pumps and other means, more cost-competitive by phasing out policy support for fossil gas.**[11]

The European Scientific Advisory Board on Climate Change notes that only a minority of Member States currently have clear plans and timelines in place to phase out fossil-fuel subsidies in their National Energy and Climate Plans.[12]

The political agreement for the Energy Performance of Buildings Directive (EPBD) envisions a phasing out of fossil-fuel subsidies by 2040 at the latest. By aiming to achieve this goal well before the specified timeline, Member States can minimise potential fossil-gas lock-in.

As discussed in Climate Bonds 101 sustainable finance policies for 1.5°C, a plan to phase-out fossil fuel subsidies sends a clear signal to markets.[13] In 2013, Denmark banned the installation of new fossil-fuel boilers and the Netherlands has restricted connections to the fossil-gas grid for new buildings since 2018. Clear plans and timelines for phasing out subsidies, as well as banning new connections to fossil-fuel networks, can drive investment into green building technology.

## Rapid deployment of heat pumps

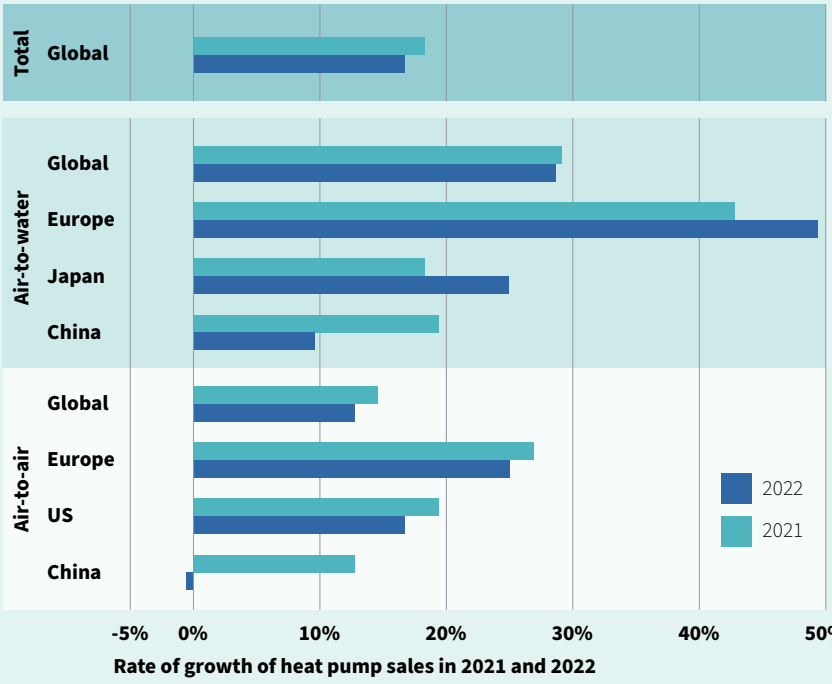


Deploying heat pumps is crucial for the transition to clean energy and achieving carbon neutrality in accordance with the goals set in the European Green Deal. All the policy scenarios supporting the 'Fit for 55' legislative proposals highlight a substantial increase in the use of heat pumps across various sectors, especially in buildings.

According to the International Energy Agency (IEA), widespread adoption of heat pumps could slash global $CO_2$ emissions by at least 500 million tonnes by 2030, – equivalent to the annual $CO_2$ emissions from all cars in Europe today.

The European Heat Pump Association reports that the current 20 million heat pumps in operation in Europe have already saved around 54 million tonnes of greenhouse gas (GHG) emissions, almost matching the annual emissions of Greece.

Figure 1. The rapid deployment of heat pumps in Europe




Source: Chart uses data from the IEA WEI, 2023[14]

**In 2022, over USD150bn of investment expenditure was dedicated to energy efficiency and electrification of Europe's buildings.**[15]

Given the challenging conditions for financial markets in 2023, it is expected this figure will have reduced slightly, but Europe continues to be the global leader in green building investment.

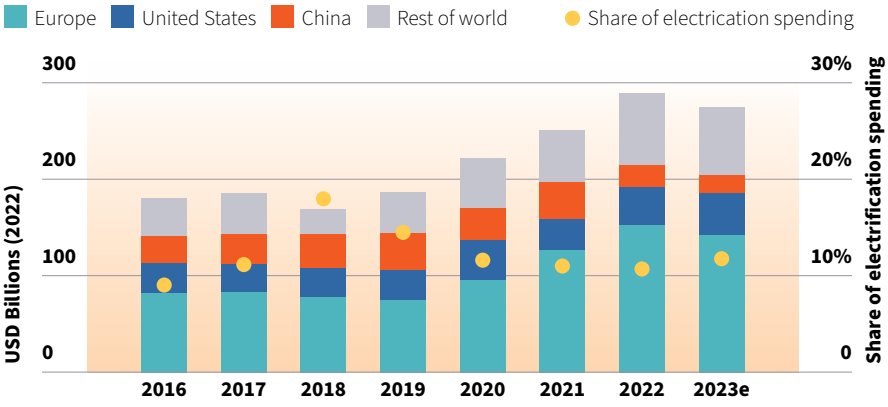
Despite these impressive capital flows, investment still needs to ramp up to reach the EU's climate goals. **The European Commission estimates that an extra EUR275bn** is required each year to bridge the investment gap and achieve the EU's 2030 objective, with a significant portion of these funds being directed towards enhancing energy efficiency.[16]

A study commissioned by the Greens/European Free Alliance from the Rousseau Institute models that buildings will be the largest sector requiring extra investment (EUR142bn p/a), out of a total extra investment of EUR360bn per year in the transition, as shown in Figure 3.

**Investors increasingly have tools available to assess the climate impact of their real estate funds and portfolios.**[17]

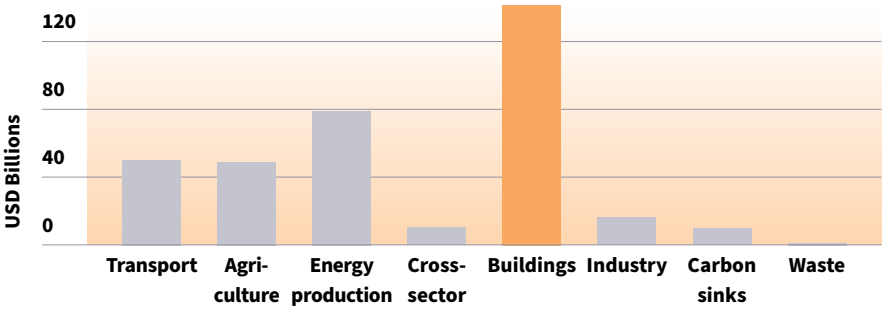
Disclosure requirements under the Sustainable Finance Disclosure Regulation (SFDR) require real-estate fund managers to consider the sustainability characteristics of their portfolios. For asset owners, greening their holdings helps to protect against transition risks as Member States push toward zero-emission building standards. There is a growing body of evidence that sustainable buildings hold value better in market downturns, meaning that energy efficiency is emerging as an important hedge against market volatility for real estate investors.[18]

Figure 2. Energy effeciency spending on buildings rose in 2022, but the ongoing cost-of-living crisis and economic uncertainty could reduce investment in 2023




Source: Chart uses data from the IEA WEI, 2023

Figure 3. Total yearly extra investment: 360bn€/year




Note: Reproduced from Greens/European Free Alliance study, Institut Rousseau[19]

**Policy interventions are needed to address barriers and trade-offs.**

Despite the widespread acknowledgment of the need to enhance the energy efficiency of buildings, progress has been slow. This may be due to various factors, encompassing both financial and non-financial barriers, as outlined in table 1. Targeted policy interventions can address a number of these barriers, such as providing support to reduce the up-front costs of low-carbon technologies, incentivising lenders to engage in more green lending, and addressing skills and knowledge gaps.

Table 1: Financial and non-financial barriers to renovating buildings in the residential and commercial sectors

| | Financial Barriers | Non-financial barriers |
|---|---|---|
| **Residential** | • Cost of renovation or installing low carbon heating<br>• Limited access to capital or difficulty financing repayment<br>• The cost of renovating the property may have a long payback period against the benefit of energy savings<br>• There are few property tax incentives to improve energy efficiency, as well as a lack of penalties for keeping fossil fuel based heating<br>• For landlords there is a split-incentive if they pay renovation costs, but do not benefit from lower energy bills<br>• Uncertainty around the duration of Government grants and other support | • Most people lack project management expertise, making managing a renovation challenging<br>• Lack of information on new technologies<br>• Skilled tradespeople might be difficult to find or in high demand<br>• Inconvenience while renovation work is ongoing, particularly for larger items such as under-floor heating<br>• For multi-unit blocks it can be difficult to secure permission from the building owner<br>• Some owners may opt to wait for greater technological maturity before renovating their own property<br>• Planning permission or other permits can be difficult to obtain |
| **Commercial** | • Carrying out renovations carries a cost but may not attract higher rents or yield<br>• Limited (but emerging) evidence that high energy efficiency adds property value or protects against market downturns<br>• Tenants may opt to move to newer buildings rather than contribute to paying for improvements<br>• Higher inflation and interest rates have increased the cost of investment due to inflation in the cost of materials | • Large-scale works often require a vacancy period which can inconvenience tenants<br>• There may be policy uncertainty or lack of awareness around MEPS<br>• Many businesses are currently seeking to reduce office space or high-street footprint rather than invest further<br>• Some commercial buildings may have mixed uses with a range of tenures and sub-leasing agreements with tenants, making agreement on renovation plans more difficult |

# 3. The existing policy landscape

Energy efficiency and renewable energy in buildings is addressed across a range of regulations and directives at the EU level. A summary of the main pieces of legislation is provided in Table 2.

Table 2. Legislative framework supporting building decarbonisation in the EU

| |
|---|
| **Taxonomy Regulation** |
| **EPBD** (Energy Performance of Buildings Directive) |
| **EED** (Energy Efficiency Directive) |
| **Construction Products Regulation** |
| **Carbon Border Adjustment Mechanism** (CBAM) |
| **Emissions Trading System** (ETS2) |
| **MCD** (Mortgage Credit Directive) |
| **SFDR** (Sustainable Finance Disclosure Regulation) |
| **Renewable Energy Directive** |
| **Public Procurement Directive** |

## Energy Performance of Building Directive (EPBD)

The EPBD is the core piece of legislation for harmonising sustainable buildings standards across the EU. It plays a crucial role within the framework of the EU Climate Law, Green Deal and Fit for 55 package.[20] The political agreement reached in December 2023 and passed in the EU Parliament in March 2024 will require new buildings to be built to a zero emission standard from 2030 but there is also an emphasis on driving renovation of existing buildings.[21]

The agreement focuses on accelerating energy-efficient renovations in the worst-performing EU buildings by establishing Minimum Energy Performance Standards (MEPS) and national trajectories for renovation. These measures aim to drive significant improvements in building efficiency, reduce greenhouse gas emissions, and support the transition to a more sustainable built environment.

The EPBD agreement sets targets and timelines for MEPS, as well as a review clause, with the Commission assessing whether further binding measures at EU level will need to be introduced to achieve targets for 2030 and 2035.

Each Member State will agree their targets and timelines with the Commission through National Renovation Plans, as part of the process for National Energy and Climate Plans (NECPs), but must follow certain minimum criteria:

- **MEPS in non-residential buildings**: By 2030 all non-residential buildings will need to be above the 16% worst performing benchmark and by 2033 above 26%.
- **National trajectories for residential buildings**: Member States will be required to ensure that the average energy consumption of the residential building stock is reduced by 16% by 2030, and by a range of between 20-22% in 2035 with 55% of the energy reduction achieved through renovation of the worst performing buildings.

Other key measures of the EPBD include:

- **Fossil fuel phase-out**: The decarbonisation of heating and cooling with a view to completely phasing out fossil fuel boilers by 2040, with subsidies cut from 2025. Financial incentives will still be possible for hybrid heating systems, such as those combining a boiler with a solar thermal installation or a heat pump.
- **New residential buildings**, from 2030, will need to optimise solar energy generation subject to conditions, and capabilities fitted progressively in other buildings.
- **All new buildings will need to be built to a zero-emission building** standard from 2030, with new public buildings meeting the standard from 2028.
- **A voluntary framework for Mortgage Portfolio Standards** incentivising mortgage lenders to establish a path to increase the median energy performance of the portfolio of buildings covered by their mortgages towards 2030 and 2050.

## Renovation Wave

The Renovation Wave is a policy framework under the Fit for 55 strategy and aims to double building renovation rates by 2030, enhancing energy and resource efficiency. The Renovation Wave is anticipated to drive the upgrading of 35 million buildings. It is an opportunity to draw in extra investment and create new skills and employment. If it meets its objectives, this initiative is projected to create up to 160,000 green jobs in the construction sector.[22]

## Renewable Energy Directive

The revised Renewable Energy Directive entered into law in November 2023 with the objective of raising the share of renewable energy in the EU's overall energy mix to 42.5% by 2030, with an adjustment targeting a 45% headline share. For buildings, there is a target of a 49% renewable energy share by 2030.

It also provides targets for a gradual increase in renewable heating and cooling, with a binding increase of 0.8% per year until 2026 at a national level, and 1.1% in 2026–2030. This is supplemented by further targets specific to Member States. The rapid deployment of heat pumps, which provide heating and cooling from ambient energy, is an important technological aim under this Directive.[23]

**Minimum Energy Performance Standards (MEPS)**

The EPBD defines minimum energy performance standards (MEPS) as 'rules that require existing buildings to meet an energy performance requirement as part of a wide renovation plan for a building stock or at a trigger point on the market (sale or rent, donation or change of purpose within the cadastre or land registry), in a period of time or by a specific date, thereby triggering renovation of existing buildings.'

## Energy Efficiency Directive

The Energy Efficiency Directive was also revised under Fit for 55 and requires a collective reduction of energy consumption of 11.7% across the EU. This Directive contains targets around renovating buildings for energy efficiency, provides support to social housing, and increases requirements for energy efficiency in heating and cooling as well as district heating.[24]

With most of these policy initiatives either in force, or nearing completion, there is a clear picture of the path to 2030. However, with the Commission recommending a 90% reduction in emissions by 2040, clearly this momentum needs to be maintained in the period until these legislative files come up for revision.

To this end, Climate Bonds has set out a range of policy options for the EU, Member States and Cities and Regions, which will help to embed regulation and make it more effective in practice.

# 20 policy levers to decarbonise buildings in Europe

### EU Level

**1.** Strengthen a common approach to building energy performance

**2.** Provide technical assistance, targeted funding and centralised data/analysis

**3.** Adopt usability reforms for aligning financial instruments to the EU Taxonomy

**4.** Strengthen and harmonise access to building energy performance labels

**5.** Set a common framework for building renovation passports

**6.** Create a voluntary definition of a green mortgage in line with the European Banking Authority (EBA) Opinion

**7.** Collecting and publishing a database of Nearly Zero Energy Building (NZEB) methodologies through the National Energy and Climate Plan process, would improve visibility for lenders.

### Member States

**8.** Central Government sets the tone for adopting sustainable building and renovation practices

**9.** Focus incentives on the electrification of buildings

**10.** Incentivise energy efficiency improvements through the tax system

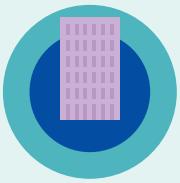
**11.** Raise awareness through national campaigns

**12.** Create central knowledge hubs for innovative financing schemes

**13.** Public procurement tilted towards green materials

**14.** Decide the overall design and operation of One-Stop Shops for renovation

**15.** Study embodied carbon in the domestic construction industry and national building stock, with a view to introducing WLC limit values in the medium term



### Cities and regions

**16.** Cities can use design and building codes to drive adoption of zero-emission building standards

**17.** Encourage large contractors and building portfolio owners to publish transition plans

**18.** Identify areas of high population density suitable for connection to district heating

**19.** Provide signposting and guidance to available funding for building owners

**20.** Establish training and development schemes for green workers

# EU Level

## 1. Strengthen a common approach to building energy performance.

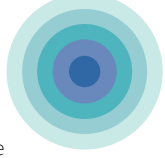
At COP 28, the EU Commission announced a target to double the annual rate of global energy efficiency improvements from 2% to 4% by 2030 under the Global Pledge on Renewables and Energy Efficiency.[25] At the EU level, strengthening a common approach to energy performance will help to reform supply chains, aggregate demand, and boost skills and employment across the Union.

While Member States understandably seek to preserve some control over rates of building renovation and the speed of transition in their energy markets, for international investors, banks, and industry to efficiently allocate capital and resources, it is paramount that the Commission:

i. Engages Member States to transpose the revised EPBD in a cohesive way on issues such as EPC methodologies, nearly zero energy building (NZEB) and zero-emission buildings (ZEB) definitions, and;

ii. Establishes a common methodology for baselining the energy performance of non-residential building stock under the MEPS and residential building stock subject to the revised EPBD's national trajectories.[26]

## 2. Provide technical assistance, targeted funding and centralised data/analysis.



Recognising that the net zero transition can signify costs for households, the Commission has created the Social Climate Fund alongside the Emissions Trading System 2 (ETS 2).[27] One of its aims is to provide dedicated funding for Member States to support fuel-poor households through a just transition, such as through investments in energy efficiency and renovation of buildings, clean heating and cooling, as well as integration of renewable energy.

By engaging with banks and other lenders during the design of mortgage portfolio standards, the Commission could leverage the Social Climate Fund to create blended funding solutions as envisioned under the EPBD agreement.[28] The Joint Research Centre provides valuable scientific advice to support policy proposals, but the Commission will need to proactively offer technical support to Member States while producing their National Renovation Plans and pathways under the EPBD's MEPS and national trajectories.[29]

## 3. Adopt usability reforms for aligning financial instruments to the Taxonomy.

The EU Commission is supported by expert advice on Taxonomy matters from the Platform on Sustainable Finance (The Platform). In its report on usability, the Platform has noted the potential for the Taxonomy to drive capital flows into the green buildings sector, as enhanced reporting by banks on their Taxonomy-aligned assets will enable them to measure progress in the decarbonisation of buildings used as security for mortgage portfolios.[30] The Do No Significant Harm (DNSH) criteria have been a particular focus for usability reforms, and for buildings, the DNSH criteria vary depending on the type of activity being assessed.

### Acquisition and ownership

In the case of acquiring and owning buildings, the sole requirement is adaptation. This means running the relevant portfolio through a range of climate physical risk models to show that there are no high-impact climate risks, in areas such as flooding and coastal erosion. Despite noting in its 2022 usability report that physical risk modelling is now widely employed by lenders, the Platform has noted that:

*'…what is not accessible to financial institutions is whether and when the building designer or developer, or the local authorities, have conducted a physical risk assessment and developed a plan to mitigate the identified risks.'*[31]

**Making information such as planned flood barrier projects and other climate adaptation proposals available to mortgage lenders, ideally through a digital passport, would improve the ability of lenders to build a fuller picture of the risk profile of their portfolios.**

### New buildings and renovations

Regarding the construction of new buildings or renovating existing ones, a more detailed and specific set of criteria related to sustainability, resource use and environmental considerations come into play.

These criteria cover a range of aspects of sustainable design; from the water flow of sink taps and showers, flush volume of cisterns, and indicators of water stress through to management and recycling of construction and demolition waste, site assessments, pollution and noise assessments.

The Taxonomy aims to establish stringent standards for sustainable design and construction. However, the high level of specificity poses a challenge for credit institutions. Historically, these institutions have not collected much of the information required to determine alignment with these criteria when granting mortgages or other loans to households.

This presents a significant challenge in complying with the DNSH standards and suggests that credit institutions might need to build out processes to collect information such as building design specifications, site assessments, air quality assessments, waste management plans and other such documents which, until now, have not been considered as part of the credit underwriting process.

There is also a question over whether banks and other financial institutions have the correct mix of skills and knowledge to be able to properly assess and analyse these documents. Until banks and other financial institutions are able to build the systems, skills and processes to evidence DNSH alignment, the European Commission may need to accept alternative forms of certification. The buildings sector has an established history of developing green certifications which are widely used by developers, in the EU and beyond, such as BREEAM, LEED, DGNB, and various other World Green Building Council schemes.[32,33,34,35] While these certifications may vary in their methodologies, they each collect and assess data points in categories such as water and energy usage, management policies, circularity and the materials used in construction.

A number of these certification schemes have also begun to map their standards against the EU Taxonomy with the purpose of showing the extent of alignment.[36] Engaging with the major buildings sustainability certification schemes would enhance understanding of the degree of alignment with DNSH criteria. Subsequently, a list of acceptable schemes could be published for credit institutions to use as evidence of compliance over a transitional period.

The Taxonomy contains an ambitious set of Technical Screening Criteria (TSCs) for developers today to demonstrate that they are at the forefront of sustainable construction. However, for the EU to meet its net-zero goals these criteria will need to become more stringent over time with declining carbon emission thresholds. Currently, the TSCs require a new building to have PED of at least 10% less than the NZEB definition in the country it is located.[37]

However, meeting EU climate targets will require developers to build to the zero-emission standard from 2030.[38] Beyond 2030, it is conceivable that best-in-class buildings might even generate more energy than they consume.[39] Similarly, for renovations, the Taxonomy currently specifies that the renovation should achieve a 30% reduction in PED.[40] This may be out of step with the latest requirements in the 2023 revision of the EPBD, which specifies that a deep renovation should meet NZEB until 2030, and beyond 2030 it should achieve zero-emission standard.

Where it is economically and technically not feasible for a building to meet the ZEB standard, a renovation resulting in at least a 60% reduction in PED will be considered a deep renovation under the revised EPBD.[41] Climate Bonds also believes there should be a greater focus in the Taxonomy on improving the worst performing buildings as envisioned in the EPBD. Reflecting this in the Taxonomy and providing recognition for financial instruments that improve a building from EPC G to EPC C or D, for example, could be a very powerful policy lever for driving renovations.

By considering how the latest legislative requirements on buildings energy performance can be integrated into the Taxonomy, the European Commission can ensure that it continues to be the gold standard. There may be benefits from explicitly specifying transition pathways, to give investors better visibility of expectations over the medium-term.

In the future of the Taxonomy, more attention will need to be paid to embodied carbon in materials alongside limit values for lifecycle GWP; and transition pathways for the stages of construction, transport, demolition and deconstruction, and reuse and recycling of a building.

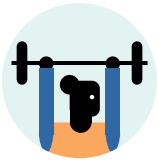
**The EU Taxonomy could further drive best practice in sustainable construction by specifying transition pathways for primary energy demand (PED) and whole life carbon in new and existing buildings, as well as reflecting increased ambition for renovations.**

### Table 3: DNSH Challenges for mortgages

| Criteria | How to verify? | Provided by? | Issue | Feasability |
|---|---|---|---|---|
| **Adaption:** Physical risks (flooding, sea level...) | Map location with risk maps | External providers | No market standards for all risks | Medium |
| **Water (comm. Buildings)** | Audits | None | Missing local regulation | Low |
| **Circular Eco:** recycle 70% of non-hazardous demolition waste | Audits | None | Missing local regulation | Low |
| **Pollution prevention:** materials used | Audits | None | Missing local regulation | Low |
| **Biodiversity:** not constructed on arable land, greenfield, forest | Registration<br>Number of building ground | Local governments | Not readily available throughout the EU | Low |

Source: Platform usability report[51]

## 4. Strengthen and harmonise access to building energy performance labels.



It is vital that banks and investors are able to access the EPC data for buildings in their portfolios. There are registers of issued EPCs in all EU Member States, but some do not provide access to property-by-property level data.[42] Access to this information is important for lenders to be able to design and target products, for example under the voluntary mortgage portfolio standard framework. It is also important for assessing risk, as highly inefficient buildings could become stranded assets and crystallise transition risks in future.

**By encouraging Member States to provide access to EPC registers on a property-by-property level, the Commission can support consistent reporting of Taxonomy alignment across the region.**

Climate Bonds has long been a supporter of harmonising EPC methodologies across Member States. This enables like-for-like comparison for banks operating in multiple countries. The latest revision of the EPBD refers to a common EU template for EPCs which is a positive step, but the EU and Member States can still work towards further harmonisation through their own initiatives.

**The Joint Research Centre can support harmonisation by conducting a benchmarking exercise of EPC methodologies to ensure that banks and investors have visibility across Member States.**

## 5. Set a common framework for building renovation passports.

Under the EPBD agreement, Member States are required to introduce a scheme of building renovation passports (BRPs) based on a common framework to be developed by the Commission before the end of 2024.[43]

Crucially, these BRPs will be expected to hold information about potential financial and technical support. In terms of financial support, the Commission ought to tailor the recommendations to the building type and building owner. The options available to a large commercial owner, such as raising funds through a green bond or Real Estate Investment Trust (REIT), will differ greatly from those available to smaller owners who will primarily raise funds through the mortgage market.

Regarding technical support, there are benefits in the BRP framework leveraging, as far as possible, existing market practices such as the data collected by building certification schemes. The Circular Buildings Coalition is conducting important work, led by University College London, to align building passport methodologies by standardising data points across schemes such as LEED, BREEAM, the Sustainable Finance Disclosure Regulation and the EU Taxonomy.[44] By aligning with existing data points, the BRP framework can leverage existing reporting rather than requiring the creation of new data.

The European Commission should also design the framework for BRPs with accessibility in mind. By making databases easy to access and understand, this will underpin a range of EU climate policy objectives, from green mortgages to mortgage portfolio standards and stress testing.

## 6. Create a voluntary definition of a green mortgage in line with the European Banking Authority (EBA) Opinion.

Creating a common EU-wide voluntary definition of a green loan or mortgage would ensure that banks and other financial institutions are mandated to collect and maintain data on the sustainability of their property portfolios. Recognising and building on the work of the EMF/ECBC to embed a market-led definition of a green mortgage with the Energy Efficient Mortgage Label would provide momentum in any future legislative proposals.

In December 2023 the European Banking Authority (EBA) issued an Opinion on green loans and mortgages in response to a Call for Advice from the Commission under the review of the Mortgage Credit Directive and other pieces of financial legislation.[45] The Opinion notes that a common definition would ensure a level playing field for credit institutions and enhance the consumer protection framework.

The paper notes that a common definition may be based on the EU Taxonomy's technical screening criteria but is careful to highlight the benefits of preserving the ability of the banking sector to innovate with green product offerings. Climate Bonds agrees that engaging with market participants and leveraging current market practices and standards would support the legislative process.

In terms of specific recommendations under the Mortgage Credit Directive, the Opinion recommends that sustainability features of the property such as the EPC rating be included in pre-contractual information provided to the borrower.

### What is a Building Renovation Passport?

The Building Renovation Passport (BRP) framework advances on the information provided by an Energy Performance Certificate (EPC) as it goes beyond an energy efficiency assessment.

A BRP can hold digital data about a building's renovation journey to date, and offer building owners tailored recommendations regarding the next best renovation steps. These recommendations are derived from an in-depth energy audit conducted on-site, adhering to predefined quality criteria, and using indicators developed through constructive engagement with the property owner.

In essence, the BRP empowers owners with relevant insights, fostering informed decision-making and enabling more effective renovation strategies.

This approach may have benefits, but the following factors are relevant to any policy decision:

- In many jurisdictions, the mortgage advice process is not tied to a particular property, but rather the financial products available to the prospective borrower(s),
- Banks and other mortgage lenders may vary in terms of their processes and policies for providing information about the property to the customer,
- In a purchase transaction, it is the duty of the seller to commission an EPC assessment, rather than the buyer or their agents,
- Access to EPC databases is not currently uniform across EU Member States, and access to information on a property-by-property basis may be restricted.

Furthermore, the Opinion recommends that green mortgages should be included in the competence and knowledge standards for staff advising on mortgages. This could be highly beneficial for the green mortgage market as a whole, both in terms of increasing professional knowledge and making sustainability an active discussion during the mortgage sales process.

It would also place green mortgages on the Board agenda of every retail bank in Europe. Despite an increasing focus on greening finance in recent years, the ECB is concerned that some banks in Europe are still not doing enough to manage climate risks, including some that do not collect EPC data at loan origination.[46,47] A voluntary definition of green loans and

mortgages could be an important way to engage both climate laggards and exemplars.

It is also important to note the link between green funding and green financing. In an analytical report accompanying the Opinion, the European Banking Authority (EBA) found that banks raising funds through green bond issuance tend to have a higher share of green loans in their overall lending, regardless of the bank's business model.[48]

### 7. Collecting and publishing a database of NZEB methodologies through the National Energy and Climate Plan process, would improve visibility for lenders.[49]

For lending on the construction of new buildings, banks need access to the methodologies for determining NZEB definitions in each Member State that they operate in. Under the revised EPBD agreement, setting the methodology for NZEB remains in the power of Member States, which can result in variations of approaches.

There is some evidence from the latest Platform report on market practices that banks are able to use EPC ratings for new buildings as a proxy for the NZEB, but this process could be improved.[50]The Joint Research Centre can conduct a benchmarking exercise of NZEBs to ensure that banks and investors are able to compare definitions across Member States.

## Member State level

### 8. Central Government sets the tone for adopting sustainable building and renovation practices.

Under the EPBD agreement, each Member State is required to agree a National Building Renovation Plan setting out 'an outline of the investment needs for the implementation of the building renovation plan, the financing sources and measures, and the administrative resources for building renovation.'[52]

As part of this process, Member States could consider the potential for sovereign green bond issuance within their capital stack. Sovereign green bond issuance provides a signal to markets that governments are taking their climate targets seriously. It could also provide borrowing headroom for a holistic package of green grants, subsidies and tax measures, particularly focussed on measures helping more vulnerable citizens through a just transition.

Sizing the scale of the challenge will be crucial to meeting the MEPS enshrined in the revised EPBD. A study in France has found that investment of EUR48bn is necessary each year to meet renovation targets for the French built environment.[53] To improve the visibility of the path to net zero, the EU could conduct research calculating the investment required in each EU27 country to meet the MEPS and national trajectories targets by 2030 and further staging posts at five-year increments.

### 9. Focus grants and incentives on the electrification of buildings

The electrification of Europe's buildings, through heat pumps and other technologies, is a central focus of the buildings transition. The International Energy Agency (IEA) projects that switching to low-carbon electricity alongside the deployment of heat pumps worldwide could slash global carbon dioxide ($CO_2$) emissions by over 500 million tonnes by 2030.[54] With the aim of supporting the phasing out of new gas boiler installations, the EU Commission is currently preparing a heat pump action plan to accelerate manufacturing and deployment with the REPowerEU aim to deploy 30 million heat pumps by 2030.[55]

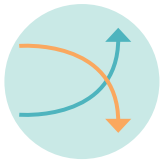
Across the EU, Member States offer grant subsidies to help with the upfront costs of installing a heat pump. In Germany, the level of support can reach as high as EUR18,000.[56] Levels of grant support often depend on whether the heat pump is ground-source, air-to-air, or air-to-water, due to ground-source installation costs being higher than others.[57] There is, however, a wide variance in terms of levels of support across Member States, meaning that installation costs may continue to be a barrier in countries where subsidies are less generous. In the short to medium term, grant support can put heat pumps onto a cost competitive basis. Over time, adoption curves and technological maturity will help to bring down the average unit cost of installation.

Electrification offers better decarbonisation prospects than alternative options such as hydrogen use for buildings. One proposal to reduce emissions associated with heating buildings is to reduce fossil gas consumption by blending hydrogen into existing gas networks. A Joint Research Centre paper finds that the hydrogen share in the blend could be around 5-10% in the immediate future, rising to 15-20% over time.[58] Beyond 20%, there are significant safety risks associated with blending hydrogen into natural gas networks.[59]

Such proposals are being touted as part of hydrogen strategies in the UK and Norway. However, whether hydrogen blending would lead to a meaningful reduction in greenhouse gas emissions remains questionable. A report commissioned by the European Climate Foundation finds that even a 20% hydrogen mix would only result in a 6-7% reduction in carbon emissions.[60]

In addition, there are very material requirements to upgrade the existing network infrastructure needed to make blending possible. These include upgrades to the pipeline network to account for the leakiness of hydrogen, and new transport and storage facilities. A review of 54 independent studies has found that none recommended hydrogen heating for buildings as a feasible option.[61] The investment needed to deploy distribution networks would be better spent on electrifying Europe's buildings.

### 10. Incentivise energy efficiency improvements through the tax system.



Under the Italian-government Tax Superbonus building-renovation scheme, homeowners and condominiums benefited from a tax credit equal to 110% of their eligible expenses for energy efficiency upgrades, renovations, and seismic improvements. This provided a financial incentive for property owners to invest in upgrades.

The Superbonus programme had a large impact, more than doubling energy efficiency investments from USD23bn in 2021 to approximately USD57bn in 2022.[62] There have been concerns about its

distributive impacts, as tax credits often benefit wealthier citizens, and recent changes to reduce the size of the tax credit are likely to affect its impact going forward, but still the scheme stands out as an effective policy intervention for its climate objectives.

Member States can learn from the experience of the Superbonus programme and target support more effectively, but tax incentives appear to be an effective lever for action. There are also other tax measures that Member States can consider. For example, the EPBD agreement foresees Member States reducing tax rates on renovation works and materials.[63] It is also notable that property taxes are often levied at convenient trigger points for renovation such as on purchase of the property or sale of a second home. Governments could consider offering rebates on these property taxes where the owner can provide robust evidence of improving the property's energy efficiency.

## 11. Raise awareness through national campaigns.

There is overwhelming public support for reducing energy use in buildings. A European Climate Foundation poll across four countries found that 89% of people surveyed said it was, overall, important for them to buy or rent an energy efficient property.[64]

However, it can be challenging for time-poor citizens to understand exactly what the best options are for reducing their property's carbon footprint. In Ireland the Reduce your Use Campaign is running across print, radio, and social media to highlight how people can take action in their own homes to reduce energy use.[65]

The creation of One Stop Shops across the EU under the revised EPBD provides an opportunity to engage the public in conversations about energy efficiency renovation.

## 12. Create central knowledge hubs for innovative financing schemes

The agreement of the EPBD recognises that finance is a crucial enabler for its policy objectives. Article 15 states that:

*'To support the mobilisation of investments, Member States shall promote the effective development and use of enabling funding and financial tools, such as energy efficiency loans and mortgages for building renovation, energy performance contracting, pay-as-you save financial schemes, fiscal incentives, for example reduced tax rates on renovation works and materials, on-tax schemes, on-bill schemes, guarantee funds, funds targeting deep renovations, funds targeting renovations with a significant minimum threshold of targeted energy savings and mortgage portfolio standards.'*[66]

A central knowledge hub providing information and guidance on each of these instruments and policy options, as well as mapping of which financial tool is appropriate for which property type, ownership and tenure, will be important for connecting consumers to suitable finance providers.

Member States should be able to connect consumers to information about which national lenders are offering green mortgages. Some options, such as on-bill schemes, will require engagement with a wider range of stakeholders including energy companies.

By setting up a central hub, Member States will encourage stakeholders to initiate contact with the government, as a well-maintained and informative hub could become a shop window for organisations offering innovative finance.

## 13. Public procurement tilted towards green materials.

Public procurement in the EU amounts to EUR2tn a year, or 14% of EU GDP.[67] Globally it represents a large proportion of demand for products such as steel (25%) and cement (40%). Green public procurement offers an opportunity to boost demand for low-carbon versions of these products.[68]

Within the EU, 55% of procurement procedures use the lowest price as the only award criteria, indicating that environmental factors are not currently given sufficient weight when purchasing goods and services.[69]

The EU can play a role in coordinating green public procurement by Member States as well as providing guidance for regions and municipalities to tilt economic incentives towards sustainable products. The EU has published voluntary green public procurement criteria to facilitate the inclusion of green requirements in public tenders. These voluntary criteria could be gradually replaced with mandatory criteria and aligned with the Taxonomy, ensuring consistency across sustainable investments.

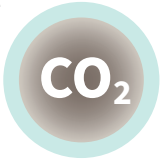
The current public procurement directive has not been modified since 2014. Since the Green Deal advocates for minimum mandatory green criteria and targets for public procurement in sectorial initiatives, there is room to also align public procurement legislation with the Green Deal Industrial Plan.

## 14. Decide the overall design and operation of One Stop Shops for renovation.

Under the revised EPBD there is a requirement for Member States to establish a national framework for One Stop Shops for renovation.[70] These will provide support and guidance on the best steps for owners to take when renovating their buildings, as well as signposting to potential funding sources and financial advice.

Establishing trusted information and resources is essential for instilling confidence in the renovation journey. Empowering these One Stop Shops, not only to assist in renovations, but also to offer dedicated training courses for tradespeople would enhance skills and knowledge. Additionally, these entities could be given the capacity to address complaints and implement redress procedures promptly if issues arise. Taking into account that One Stop Shops can operate at a federal, regional or city level, central government can play a key role in the initial policy design as well as sharing best practice and learning from what works well in other countries.

## 15. Study embodied carbon in the domestic construction industry and national building stock, with a view to introducing WLC limit values in the medium term.




As operational emissions reduce over time with more efficient technologies and installation of renewable energy, there is increasing focus being paid to Whole Life Carbon (WLC) in the construction, renovation and circularity of buildings. Currently, it is estimated by WBCSD and Arup that less than 1% of building projects calculate and report their full carbon footprint.[71]

Encouragingly, the construction industry is starting to show signs of taking WLC and circular construction seriously. In 2022, a cohort of 17 prominent construction firms established an ambitious target of procuring 100% net-zero concrete by 2050. They also made a firm interim commitment to employ 50% low emission concrete by 2030. Supply chains will adjust over time, but this needs to be done with greater urgency and across the whole industry.

Increasingly investors are taking a greater interest in the full carbon footprint of companies they invest in. The Institutional Investors Group on Climate Change has released a useful WLC guide

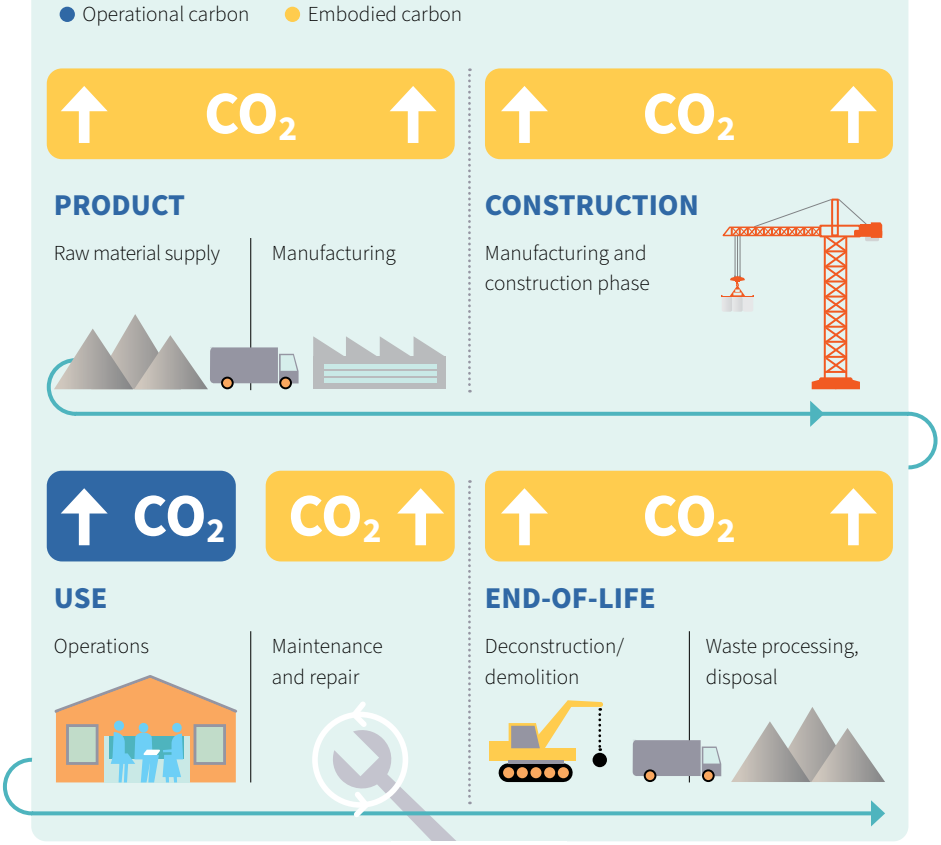
looking at the various stages of production, construction, and in-use and end-of-life stages as well as highlighting industry standards and the evolving regulatory landscape.[72]

Member States can drive forward the measurement of WLC by studying domestic construction industries and looking at providing guidance for construction companies and manufacturers to reduce emissions from all life stages. To date, five EU Member States have started on the journey towards regulating WLC. These are France, the Netherlands, Sweden, Denmark and Finland.

The EPBD references the estimation and disclosure of Global Warming Potential (GWP) under the Level(s) Framework. It also requires Member States to set out a roadmap for introducing GWP limit values for new buildings by 2027 with a view to setting targets from 2030. Member States will also need to pay close attention to the European Commission's forthcoming WLC roadmap.[73]

The Climate Bonds Buildings Criteria 2.1 requires from 2024, for the first time, a Lifecycle Carbon Assessment for new buildings alongside a statement of confidence in the data quality. Achieving perfect data quality, especially in a relatively new field like WLC, is challenging. However, the industry must initiate the process, and data quality will improve over time as standards emerge.

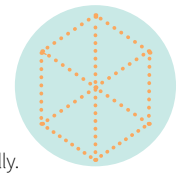
**Figure 4 – Lifecycle stages of Whole Life Carbon**




Source: Adapted from BPIE[83]

# Regions and city level

## 16. Cities can use design and building codes to drive adoption of Zero-Emissions Building standards.



Cities and regions often have responsibility for specifying building codes and zoning regulations. Often, they are trailblazers in driving up construction standards generally.

A 2021 OECD Survey found that, globally, 88% of cities and regions surveyed demand higher energy efficiency standards than the national level in building energy codes, and 25% call for a net-zero energy level.[74] Policies at a municipal level can also drive the delivery of positive-energy buildings and districts.

## What is a zero-emission building?

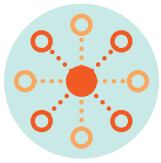
Article 2 of the revised EPBD defines a zero-emission building (ZEB) as a building with a very high energy performance in line with the energy efficiency first principle, and where the very low amount of energy still required is fully covered by energy from renewable sources at the building or district or community level where technically feasible (notably those generated on-site, from a renewable energy community or from renewable energy or waste heat from a district heating and cooling system).

## 17. Encourage large contractors and building portfolio owners to publish transition plans.

Cities often provide public funding and administrative assistance for large-scale regeneration projects. Cities and other local authorities can integrate sustainability into their scoring systems for choosing contractors for the refurbishment of public buildings, publicly funded regeneration contracts, and in public-private partnerships.

One metric that cities and local authorities can use to screen bidders for sustainability characteristics is whether they have a transition plan in place. A transition plan can also form the basis of a green bond framework and related bond issuance. They can also check the quality of any climate-related financial disclosures and assess whether the bidder has established sustainability reporting processes.

### 18. Identify areas of high population density suitable for connection to district heating.



Heat networks could be designated as nationally important infrastructure. Alongside a national strategy, cities and regions can use their local knowledge and powers to identify priority areas for connecting to heat networks, focusing on population density and connectivity.

The success of broadband rollout across Europe shows that national strategies twinned with local knowledge can advance technological adoption within a matter of years.

Scandinavian nations are renowned for their advanced district heating networks. In Finland, around 65% of new buildings are connected to district heating each year.[75]

The revised Renewable Energy Directive came into effect in 2023, with the objective of more than doubling the proportion of renewable energy and waste heat in district heating and cooling, elevating it from 1% to 2.2%.[76] Additionally, the Directive seeks to step up support for infrastructure development, placing an emphasis on the deployment of large-scale heat pumps at the district level.

### 19. Provide signposting and guidance to available funding and investment sources for building owners.

The 100 Mission Cities programme, in which the chosen cities aim to achieve carbon-neutrality by 2030, is an ideal opportunity for cities to share knowledge on effective ways to pool public and private finance, while ensuring accessibility for local building owners.

Bankers Without Boundaries and Climate KIC have been commissioned by the EU's 100 Mission Cities programme to develop a Mission Cities Capital Hub, that brings together public and private capital to help cities reduce their carbon emissions.[77,78]

### 20. Establish training and development schemes for green workers.

Between 2019 and 2020, there was a 5% increase in jobs within the European Union's renewable energy sector. This rise signifies the growing presence of green employment opportunities, with approximately 1.3 million people now directly or indirectly employed in the renewable energy field. Of these jobs, 24% (318,000) were linked to heat pump installation.[79]

Although it is encouraging to see various EU Member States providing financial support for installing renewable energy sources in buildings, such as grants for heat pumps and solar PV, this needs to be supported by comprehensive knowledge and skills training to guide tradespeople smoothly into the green economy.

In 2018, the European Construction Skills Observatory highlighted a critical need for upskilling in the construction sector. Specifically, over 3 million construction workers across Europe were identified as requiring enhanced expertise in the realms of energy efficiency and renewable energy systems within the building sector. This includes workers specialising in heat pump installations and energy-efficient retrofitting.

The revised Energy Efficiency Directive requires Member States to ensure the appropriate level of competences for energy efficiency-related professions, including establishing training programmes where appropriate.[80] Similarly, the EPBD requires Member States to put in place measures and financing to promote education and training in the built environment.[81]

At a city and regional level, training schemes can be linked to the provision of One Stop Shops, which can share best practice, given that cities and regions are at the correct level to identify skills and knowledge gaps in the local economy.[82] Acting on skills and training is also good for local economies. Renovate Europe estimates that 18 green jobs are created in the EU for every EUR1mn spent on energy efficiency of buildings.

# 4. Conclusion

This report has outlined a set of policy recommendations aimed at enhancing the energy performance of buildings and driving effective implementation of regulation across three levels of government. These recommendations offer options for embedding the Fit for 55 package over the coming years and furthering collaboration between the EU, Member States, and Cities/Regions.

A net-zero built environment is at the heart of the EU's climate ambitions. While public financing is essential, the EU also needs to leverage private finance by providing a stable policy environment, engaging investors, and aligning incentives.

Private sources of capital, including green bonds, green consumer loans and mortgages, private equity, blended finance, and equity loans, offer innovative and scalable solutions. The involvement of private investors can also inject fresh expertise and efficiency. By leveraging the strengths of both public and private finance, the EU can mobilise the resources needed to fund the buildings transition.

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