



RECOVERY AND RESILIENCE SCOREBOARD

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EU

Thematic analysis

Energy efficiency in buildings

July 2024



This paper is part of a series of thematic analyses undertaken by the European Commission to illustrate the impact of the Recovery and Resilience Facility (RRF). The RRF is the European Union's largest ever funding instrument and is intended to support European economies and societies to recover from the Covid-19 pandemic and build resilience against future shocks. EU Member States commit to implement ambitious reforms and investments and receive funds from the RRF when they achieve these commitments.

Recovery and Resilience Scoreboard

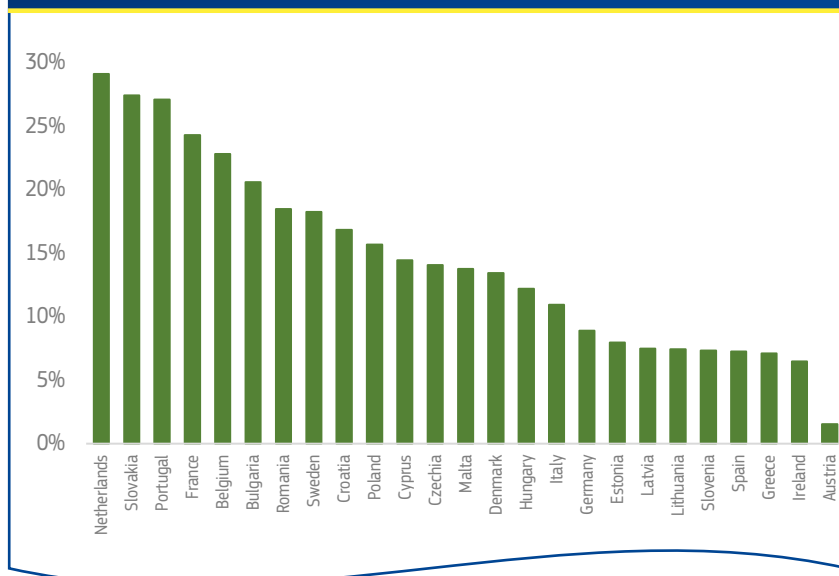
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Highlights

Energy efficiency expenditure in buildings

As a percentage of Member State's RRP estimated cost



Overall, total estimated expenditure in energy efficiency in buildings amounts to EUR 81.1 billion, across 25 member states, which corresponds to 12.4% of the total expenditure in the plans. This expenditure is matched with 23 reform measures across the 25 Member States.

23

REFORMS

296

INVESTMENTS

Some key reforms and investments

Renovation of buildings to improve energy efficiency

The RRF supports actions to reduce the primary energy consumption of both private and public buildings, notably through wall insulation, replacement of windows and doors and the replacement of heat generating appliances with cleaner and more efficient alternatives.

Addressing energy poverty

The RRF measures help combat energy poverty by implementing initiatives targeting economically vulnerable households. Investments in energy renovation and major rehabilitation works to improve energy efficiency reduce energy bills, while also improving comfort and ensuring access to basic energy services.

Fostering and facilitating building renovations

Many national plans include amendments to the national regulatory framework to foster the phase-out of outdated heating systems, and incentivise their replacement with greener solutions, to reduce the administrative burden and boost private investments, to improve advisory services on energy efficiency projects for citizens and businesses.

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Policy Overview

Saving energy is the safest and cleanest approach to advancing the clean energy transition, while simultaneously enhancing energy security and affordability. Energy efficiency measures help reducing the overall energy consumption and are therefore central to achieving the objectives of the European Green Deal and the Fit for 55 package. They also contribute to achieving the REPowerEU objectives¹ by strengthening our economy's resilience and by reducing the dependency on fossil fuels. Moreover, saving energy through energy efficiency measures directly helps reduce household energy bills, thus contributing to alleviating energy poverty and protecting vulnerable groups with a lasting impact.

To reduce overall energy consumption, implementing energy efficiency measures in buildings is especially crucial. The building stock is the largest single energy consumer in the European Union (EU), accounting for around 40% of the EU's energy consumption and about 35% of EU's energy-related greenhouse gas ('GHG') emissions.² To achieve the net 55% emission reduction target by 2030, the EU should reduce direct energy-related GHG emissions of the buildings sector by at least 60%, its final energy consumption by 14% and energy consumption for heating and cooling by 18%.³ Around 75% of the EU's building stock has a poor energy performance. Most buildings were constructed before current energy requirements were in place and it is estimated that about 85-95% of today's buildings will still be in use by 2050. These figures point to the urgent need for energy efficiency renovations on a large scale.

Renovation works, to be effective, should integrate measures for improving in a consistent way the energy performance of buildings. While approximately 11% of the EU's existing building stock undergoes some level of renovation each year (either light, medium or deep renovation), the focus on reducing energy consumption, modernising technical building systems and installing renewables is still low and often lacking. Across the EU, deep renovations (reaching the Nearly Zero Energy Buildings Standard or at least reducing energy consumption by 60%) are carried out only in 0.2% of the building stock. The pace of energy renovations needs to be significantly scaled up to meet the EU's climate objectives.

The main challenges currently hampering the scaling up of investments in energy efficient renovation include: (i) the lack of available funding to overcome the high investment costs, including the barriers to crowd-in private capital; (ii) the lack of stable and predictable market and policy conditions creating uncertainty among market operators and home owners; (iii) end-consumers' limited knowledge on the economic potential (and the wider benefits) for energy savings and funding opportunities available to them; (iv) a low renovation rate of government buildings with inefficient use of energy sources; (v) the shortage of skilled professionals to conduct energy efficient renovations; and (vi) the fact that the fiscal and regulatory measures in place do not provide the right incentives.

¹ In response to the hardships and global energy market disruption caused by Russia's invasion of Ukraine, the European Commission presented in May 2022 its [REPowerEU plan](#). The main objectives of the plan are to strengthen measures to save energy, produce clean energy and diversify our energy supplies. The enactment of the REPowerEU legislation will allow Member States to amend their Recovery and Resilience Plans to include additional measures contributing to the REPowerEU objectives. Upscaling and reinforcing the energy efficiency measures in buildings (both in terms of investments and reforms) would directly contribute to the objectives of the REPowerEU plan by leading to additional energy savings, and less reliance on fossil fuels from Russia.

² EEA, Trends and projections in Europe 2023, EEA Report 07/2023.

³ Compared to 2015 levels, see SWD (2020) 176 final. Buildings are responsible for greenhouse gas emissions before, during and after their operational lifetime. The 2050 vision for a decarbonised building stock should progressively take into account the whole life-cycle emissions of the buildings, not only in new construction but also in renovations.

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Looking at the investment needs, the building sector is facing one of the largest investment gaps in the EU. Energy efficiency in buildings has a major role to play to achieve the 55% emission reduction target by 2030, that requires additional investments of around EUR 275 billion in building renovations every year.⁴ To reach the REPowerEU objective of reducing dependence on Russian gas supply, an additional EUR 56 billion of overall investments in energy efficiency and heat pumps is needed until 2030.⁵

Investments in energy efficiency also help to reduce energy poverty. Households with no access to affordable and reliable energy sources are considered to be in energy poverty. This affects their health, living standards and the levels of heating, cooling, and lighting of their homes. The increase in energy prices, coupled with the living cost crisis, have driven a significant increase in the number of people that were unable to keep their homes adequately warm.⁶ This number has reached approximately 40 million in 2022, representing 9.3% of the EU population and marking a significant increase compared to 6.9% in 2021.⁷ Building renovations remain limited in energy-poor households due to financial obstacles as well as the overall lack of awareness and dedicated support. In October 2023 the Commission published a new Recommendation on energy poverty⁸ urging Member States, among others, i) to set up schemes that enable access of households affected by energy poverty to energy efficient household appliances, in order to reduce the energy bills of both tenants and homeowners, ii) to accelerate the renovation rate regarding the buildings with the worst energy performance, since people affected by energy poverty tend to live in such buildings and (iii) to establish regulatory and social safeguards and to analyse the policy mix to ensure that housing costs following energy efficiency improvements or renovations of dwellings do not result in excessive increases in rents and housing costs leading to unaffordability issues.

The revised ‘Energy Efficiency Directive’ (EED) sets the goal of reducing EU final energy consumption by 11.7% by 2030. The revised EED directive, which entered into force on 10 October 2023, establishes ‘energy efficiency first’ as a fundamental principle of EU energy policy, giving it legal standing for the first time. In practical terms, this means that energy efficiency must be considered by EU countries in all relevant policy and major investment decisions taken in the energy and non-energy sectors. At the same time, the revised EED puts a stronger focus on alleviating energy poverty and improving the financing environment for energy efficiency. It aims to raise awareness and provide information on energy efficiency among consumers.

The revised “Energy Performance of Buildings Directive” (EPBD) aims to further decarbonize the buildings sector. The revised Directive aims to progressively reduce greenhouse gas (GHG) emissions and energy consumption in the EU building sector and to make the sector climate neutral by 2050. It also aims to increase the number of worst-performing buildings renovated and improve information-sharing on energy performance. Member States will need to establish enhanced Building Renovation Plans (former long-term renovation strategies) and introduce minimum energy performance standards, clearly targeting the worst performing buildings. The revised Directive also requires that all new buildings as of 2030 be zero-emission buildings (ZEB).⁹

⁴ COM(2020) 662 final

⁵ SWD(2022) 230 final

⁶ One of the key indicator to measure energy poverty, among others (arrears in energy bills, high share of energy expenditure in income, low absolute energy expenditure, etc.). Energy poverty is a multidimensional phenomenon that cannot be explained by only one indicator.

⁷ SWD(2023) 647 final

⁸ Commission Recommendation (EU) 2023/2407 of October 2023 on energy poverty and Staff Working Document (SWD(2023) 647).

⁹ A zero-emission building is defined as a building with a very high energy performance, with the very low amount of energy still required fully covered by energy from renewable sources and without on-site carbon emissions from fossil fuels.

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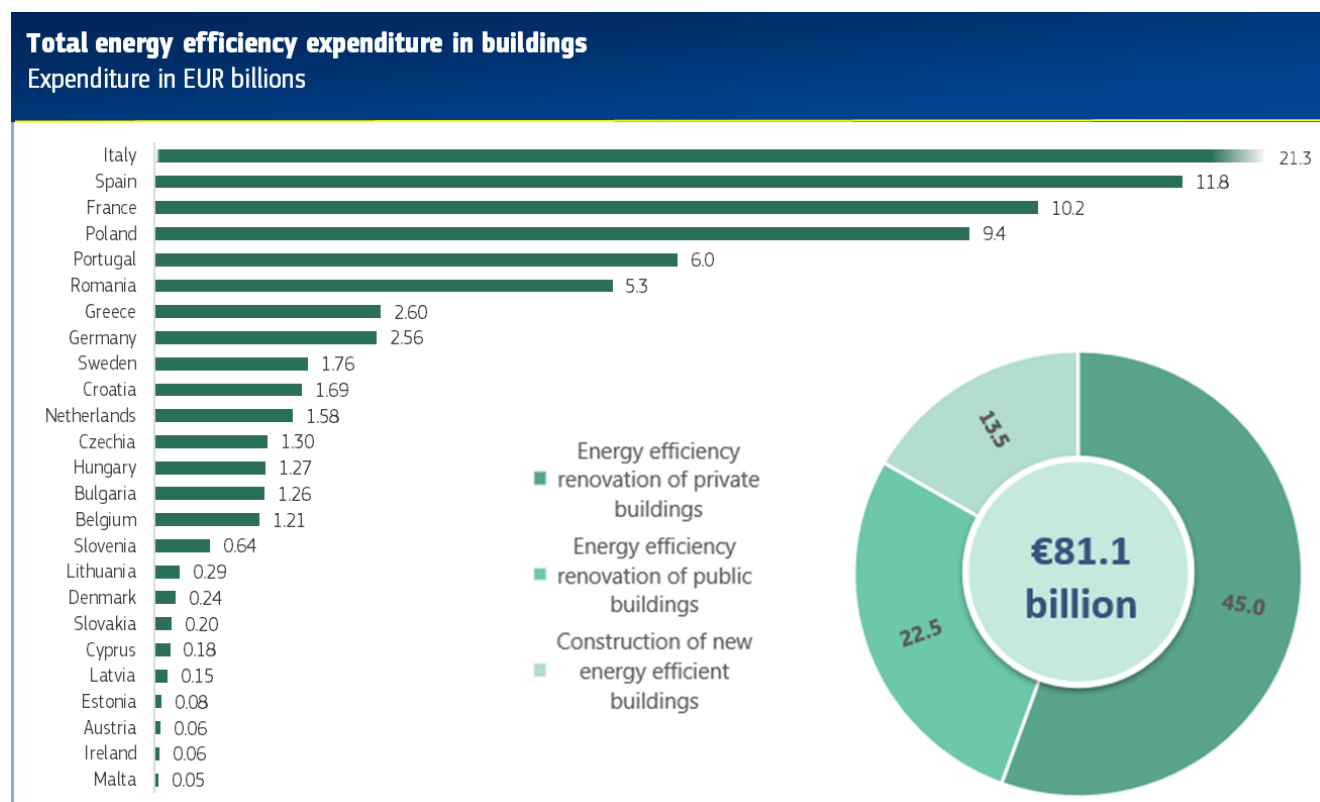
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The Social Climate Fund (SCF) will serve as an additional funding instrument amounting to EUR 86.7 billion for the period 2026-2032 to support vulnerable households, micro-enterprises and transport users for investments aimed to reduce reliance on fossil fuels. The SCF was established by Regulation (EU) 2023/955 which entered into force on 5 June 2023 and Member States are required to submit their social climate plans outlining concrete measures by 30 June 2025. The plans should include national and regional measures to carry out building renovations, decarbonise heating and cooling systems, integrate renewable energy, among others.

Energy efficiency in the recovery and resilience plans

Overview of the Recovery and Resilience plans



Note: The investments in energy efficiency covered by the RRP amount to EUR 106.5 billion. This figure has been obtained by summing the estimated expenditure associated with measures tracked with intervention fields 024/024bis/024ter/025/025bis/025ter/026/026bis. These intervention fields have been assigned in accordance with the methodology for climate tracking included in Annex VI of the RRF Regulation. **However, this chart only relates to estimated expenditure on energy efficiency in buildings, which is a subset of the overall investments in energy efficiency.** For the purpose of this exercise, the measures related to energy efficiency in buildings are those tracked with intervention fields 025/025bis/025ter/026/026bis. The estimated expenditure in the RRP associated with these measures amount to EUR 81 billion. Finland and Luxembourg do not have climate-tagged investments in energy efficiency in buildings in their RRP.

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Investments

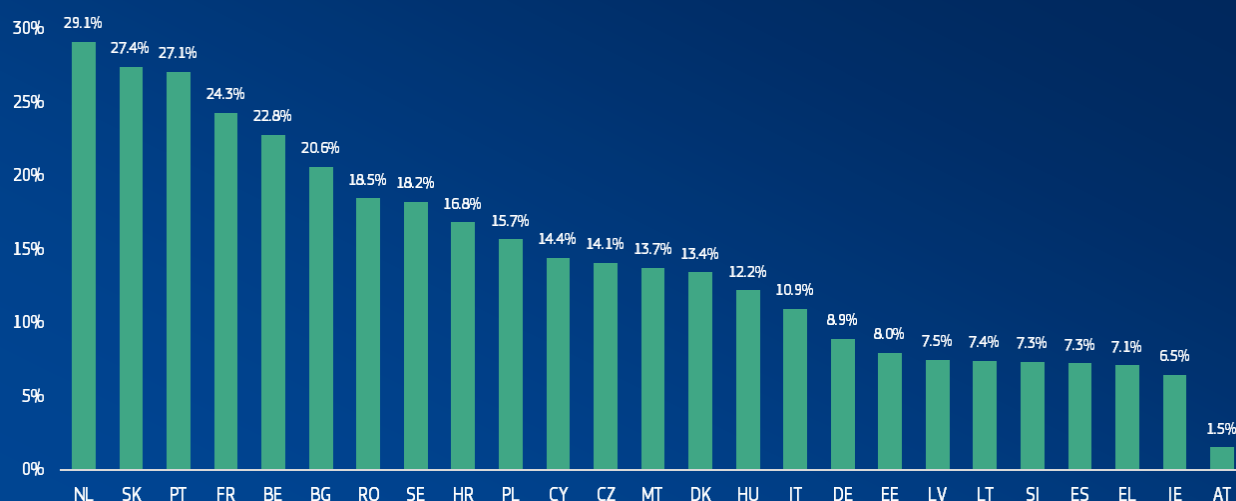
26 Recovery and Resilience Plans include investments dedicated to energy efficiency overall.¹⁰ The total estimated investments in energy efficiency amounts to EUR 106.5 billion, covering measures in energy efficiency renovation of buildings, improvement of the efficiency of the energy sector, energy saving in production processes in enterprises, etc.¹¹ The scale of funding under the Recovery and Resilience Facility makes it the largest single EU funding instrument supporting energy efficiency measures in the EU. Portugal and Slovakia allocate more than 30% of their RRF envelope to this area, followed by the Netherlands and France, with 29% and 26% of the budget of their plan respectively allocated to energy efficiency. Altogether, estimated investments in energy efficiency accounts for 16% of all RRFs' estimated costs.

Investments dedicated to energy efficiency in buildings (both private buildings and public buildings and infrastructures), amount to EUR 81 billion. This corresponds to 12% of the total budget of the plans and to 76% of all RRF investments in energy efficiency. In absolute terms, more than one fourth (26.2%) of the investments in energy efficiency in buildings will be implemented by Italy, followed by Spain (14.6%), France (12.5%) and Poland (11.6%). Jointly, these countries represent 65% of all RRFs' investments in energy efficiency in buildings.

An estimated EUR 49.3 billion, representing nearly 61% of the total investments in energy efficiency in buildings, goes to renovation schemes that have the objective to achieve, on average, medium-depth level renovation, which results in at least 30% primary energy savings. Energy efficiency measures supported by the RRF will also contribute to other environmental objectives such as reducing air pollution.

Share of expenditure in energy efficiency in buildings

Expenditure in energy efficiency in buildings, % of total estimated cost of Member States' RRP



Note: This chart shows estimated expenditure on energy efficiency in buildings by Member State as a percentage of the total estimated costs of the measures of the RRF.

¹⁰ Luxembourg did not include energy efficiency measures in its Recovery and Resilience Plan.

¹¹ The figure on total estimated investments has been obtained by summing the estimated expenditures associated with measures tracked with intervention fields 024/024bis/024ter/025/025bis/025ter/026/026bis, assigned in accordance with the methodology for climate tracking included in Annex VI of the RRF Regulation. **This fiche however primarily focuses on measures on energy efficiency in buildings**, whose underpinning estimated expenditures are a subset of the total estimated expenditures in energy efficiency and amount to EUR 81 billion (see explanatory note under the Chart on "Total energy efficiency expenditure in buildings per Member State"). Estimated investments in district heating and cooling systems, not included in the above amounts, account for an additional EUR 1,6 billion EUR.

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The corresponding measures are identified by only including those tracked with intervention fields 025/025bis/025ter/026/026bis, assigned in accordance with Annex VI of the RRF Regulation.

The largest portion of investments in buildings (EUR 45 billion) are making private buildings more energy efficient. The measures under the RRP involve the replacement of windows and doors, wall insulation, green facades and roofs, and the replacement of boilers, oil burners and gas furnaces with cleaner alternatives.¹² The supported measures also target vulnerable groups for whom the significant upfront costs make it almost impossible to invest in the energy efficiency of their homes – thus also contributing to addressing energy poverty issues.

Energy efficiency renovations of public buildings and infrastructures are also well represented across the plans (EUR 22.5 billion). Such renovations mainly target schools, universities, sport halls and historical buildings. These are typically buildings that are used on a daily basis and by a large number of people. In general, the focus is on the worst-performing public buildings and/or buildings heated by oil burners and gas furnaces. Alike investments in private buildings, renovations aim, in general, to achieve at least 30% primary energy savings. Moreover, several Member States will invest in improving the energy efficiency of public lighting systems.

In addition, EUR 13.5 billion will be invested in the construction of new highly energy efficient public and private buildings. Newly constructed buildings have to go beyond the latest energy efficiency standards, meaning that new buildings' primary energy demand must be at least 20% lower than the nearly zero-energy building (NZEB) requirement enshrined in national regulations. The construction of new public buildings mainly includes new hospitals, schools, and early childcare facilities. Additionally, several Member States invest in new social houses for vulnerable groups.

Reforms

The plans include several reforms tackling different barriers to conduct building renovation in all sectors: private and public buildings, as well as residential and companies. The main categories of reforms include introduction of innovative, non-grant financing schemes, simplification or upgrading of the regulatory framework for energy efficiency renovations, elaboration of long-term renovation strategies, creation of one-stop shops and upskilling and reskilling of workers.

Several Member States have included in their plans reform measures aimed **to develop and/or introduce non-grant financing schemes** with the potential to boost energy efficient interventions in buildings. Croatia will adopt a reform that, among others, covers the development and test on a pilot project of a model that enables the customer to apply for an energy renovation loan and repay it through his/her energy account, adjusted for energy savings achieved through the renovation. Greece is working on a roadmap for the introduction of non-grant financial instruments. These will include fiscal incentives, subsidised or guaranteed loans and other financial tools to support energy efficiency investments in the building sector. Based on the roadmap, an energy efficiency financial instrument will be launched.

Amendments to **the regulatory framework** are mainly focused on fostering the phase-out of outdated heating systems and encourage their replacement by renewable energy or district heating. Several Member States aim to simplify the regulatory framework to encourage energy efficiency related private investments, including by tackling barriers for the renovation of multi-family apartment buildings and by reducing the administrative burden for applicants to renovation schemes. For example, following a reform in Spain, communities of apartment owners may now decide

¹² Some energy renovation schemes also finance seismic improvements, but these have not been tagged with a positive climate coefficient and therefore are not reflected in this fiche.

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by simple majority to renovate their multi-family apartment buildings and for this purpose also have access to finance on more favourable terms. Romania also simplified its regulatory framework to support investments in green and resilient buildings, with the aim to reduce by at least 50% the time required for the issuance of building permits.

Energy poverty is also addressed in several plans through developing strategies designed to improve energy efficiency of residential buildings among economically vulnerable households. A support programme established under the Greek plan, for example, specifically dedicates around 20% of its budget to energy efficiency interventions in energy poor residences.

In order to facilitate building renovations, several plans aim **to establish a long-term enabling framework to actively assist citizens with their energy renovations. This includes support for the creation of one-stop shops.** The aim is to offer a single entry point (online or physical) where citizens and/or private entities willing to undertake renovations on their premises, can have access to all the relevant information from support schemes available (grants, tax reductions, bonuses etc.) to legal and technical advice (such as technological solutions, permitting procedures), so support is given at all stages of the renovation process. For example, Italy has launched a national portal for the energy efficiency of buildings that will support citizens and operators in managing energy efficiency projects and contain information on the energy performance of the national building stock. In parallel, a one-stop shot has been set up.

Finally, some Member States included in their plans reform measures concerning the **reskilling and/or upskilling** their workforce. Given the new environmental requirements for constructions and new green technologies, measures combining both investments and reforms on reskilling and upskilling current construction workers are important to avoid a mismatch between demand and supply of energy renovation services.

Good practices

Energy efficiency renovations in private buildings

 The REPowerEU chapter of the **Romanian plan** includes voucher schemes for households to invest in the energy efficiency renovations of at least 33 000 homes and the installation of photovoltaic panels and storage batteries to produce renewable energy for their own consumption ("prosumers", with at least 122 000 vouchers). These **investments are complemented by a reform introducing one-stop-shops at regional level** to inform households about the benefits, practicalities, and funding opportunities for energy efficiency renovations and/or of becoming a prosumer.

 At least 28 224 single-family buildings and at least 307 122 m2 of public buildings should be renovated thanks to the **Slovak plan**. Projects aim to decarbonise the building stock by combining energy efficiency actions with integration of renewables and climate adaptation solutions. Most of these renovations are expected to deliver on average at least a 30% reduction of primary energy savings. The measure includes incentives to motivate owners to conduct deep renovations as well as a **dedicated scheme for vulnerable groups**. On the reform side, existing support schemes will be harmonised under one comprehensive support mechanism for the renovation of family houses and for the creation of a network of regional offices. Also new legislation was introduced to increase the currently low recycling rate of construction and demolition waste along with green public procurement for the contracting of construction works in the national administration, to increase the potential of the circular economy.

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The grant measures in the **Spanish plan** are estimated to deliver on average 71 000 energy efficiency renovations of dwellings per year. Some measures link the level of grant support to the depth of renovation or the household income. All measures require that at least 30% primary energy savings are achieved. These investments are complemented with reforms to improve the general uptake in renovations, such as the set-up of one-stop shops that will facilitate households in the sometimes very complex task to conduct a renovation. In addition, the new financial instruments under the modified plan are expected to further boost energy efficiency renovations.



The Greek plan includes energy efficiency measures in the existing housing stock worth almost EUR 1.4 billion. Among other actions, the plan covers an investment measure in the energy renovation of residential buildings. The support programme specifically dedicates around 20% of its budget to energy poor residences and the investment is accompanied by a reform consisting in the adoption of an energy poverty action plan. The investment also covers the installation of 150 MW of new renewable energy production capacity from energy communities operated by municipalities. This new capacity will supply electricity to 30 000 energy-poor households. The investment already delivered the first 10 000 certified renovations, and by the end of 2025 the number of renovations is expected to reach 116 500 units.



Energy efficiency renovations in the residential sector of **Bulgaria** are particularly challenging due to the high share in the existing stock of large multi-family apartment buildings with numerous individual owners. The amendments to the relevant national legislation under the Bulgarian plan aim to facilitate the decision-making process by lowering the required threshold to support energy efficiency renovations of buildings. Furthermore, through amendments to the Energy Efficiency Act, the Bulgarian plan aims to facilitate the use of Energy Service Companies (ESCO) models for covering the financing for renovations through the energy bills. By implementing these reforms and allocating EUR 646 million towards residential building renovations, Bulgaria aims to renovate 3.6 million square meters of residential structures. Of the overall allocation, EUR 608 million will go to renovations achieving an average of at least 30% primary energy savings.

Energy efficiency renovations in public buildings



France makes a significant contribution to the objective of reducing its CO₂ emissions by dedicating EUR 6.4 billion to energy renovation measures for public buildings. A subset of these measures worth EUR 3.8 billion will achieve an average of at least 30% primary energy savings. These build upon the initiatives already undertaken by France with the aim of developing a wider professional know-how to underpin renovations at a larger scale. The plan also contains a significant reform on the energy efficiency standards for new buildings (RE2020), which is considered key to mainstream good practices for the reduction of carbon impact of constructing new buildings and their adaptation to climate change.



Croatia finances a large-scale renovation to improve the energy efficiency and performance of at least 1 250 000 m² of public buildings (including those damaged in earthquakes in 2020). It is expected that the energy renovations achieve a minimum requirement of reducing energy consumption for heating by at least 50% compared to the annual energy consumption for heating prior to the renovation. Croatia is also proposing financial support based on the ambition of the renovation: grants and will cover up to 80% of eligible renovation costs in case of deep renovations or blended seismic and energy renovations.



Since **Romania** is one of the European countries most exposed to seismic risk, energy renovation is to be carried out in parallel with **seismic renovation to ensure a cost-efficient approach and a long-lasting effect of the investment**. The renovations are of at least a medium-depth level. It is expected that at least 2.3 million m² of public buildings will be renovated.

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Energy efficient constructions



The **Portuguese** building stock has a structural shortage of permanent and temporary housing solutions for more vulnerable groups. Under its plan, Portugal will finance the **construction of new buildings and the renovation of existing dwellings for vulnerable groups**, as well as the creation of **temporary accommodation for persons at imminent and actual risk of being left without accommodation following risks or social emergencies**. Additionally, the Portuguese plan aims at providing affordable public housing for targeted groups in large urban environments, including student accommodations. All newly constructed buildings must have a primary energy demand at least 20% below the requirements of nearly zero energy buildings.



Several member states plan to invest in new, **energy efficient healthcare buildings** and laboratories to tackle structural problems evidenced during the Covid-19 pandemic outbreak. For example, the **Slovak plan** includes a reform to optimise the **hospital network**. A substantial part of newly constructed hospitals as a result of the optimisation reform, must meet high energy efficiency requirements and obtain the certificate Building Research Establishment Environmental Assessment Method (BREEAM).



Investments financed by the Recovery and Resilience Facility are also dedicated to the **construction of schools, universities and early childcare facilities** across various Member States. For instance, the **Slovenian** plan will invest EUR 66 million in the construction or renovation/extension of 9 new highly energy-efficient educational institutions. On early child-care, the **Czech** plan provides for the construction of at least 98 new childcare facilities and the **Belgian** plan includes EUR 61m for the construction and renovation of 1 700 early childcare infrastructure in the Walloon region. All new infrastructure under the RRF must comply with the requirement of at least 20% primary energy demand below the nearly zero-energy building.

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Country overview

The figures in this section show the expenditure of measures targeting energy efficiency in buildings (tracked with intervention fields 025/025bis/025ter/026/026bis) out of total expenditure on energy efficiency measures (tracked with intervention fields 024/024bis/024ter/025/025bis/025ter/026/026bis). For all Member States, the listed relevant components are based on the Annexes to the Council Implementing Decisions.

Austria

EUR 213 million in energy efficiency out of which EUR 64 million for energy efficiency in buildings. Relevant components: 1 (A.3), and 4 (C.3)

The Austrian plan comprises a series of investments and reforms with an emphasis on energy efficiency in homes and green investments in enterprises. The new Renewable Heating Law will regulate the phase-out of outdated heating systems in existing buildings, ban the installation of oil boilers in new buildings and create a common platform to coordinate flanking measures against energy poverty. The investments will focus on supporting private households to replace oil and gas heating with more sustainable heating devices (heat pumps, biomass and district heating). Additionally, to combat energy poverty, investments under the plan will promote energy efficiency and energy savings targeting low-income households, local municipalities and business through deep renovations, district heating, façade greening, and private investments.

pumps in respectively 3 600 and 285 social housing units in Wallonia.

Bulgaria

EUR 1 435 million in energy efficiency out of which EUR 1 263 million for energy efficiency in buildings. Relevant components: 4 (R1, R2, R3, R4, I1, I3)

The Bulgarian plan aims to improve the energy efficiency of both residential and non-residential buildings through the financing of large-scale renovations and targeted reforms to facilitate investments in energy efficiency. The reforms include the simplification and the update of the regulatory framework for transitioning to green buildings, including establishing a decarbonisation fund, the acceleration of energy efficiency projects using Energy Service Companies (ESCO) models, and the introduction of a definition of “energy poverty”. Regarding investments, the renovation of public and private buildings aims to cover over 5 million m² of gross floor area. 23% of the value of investments in buildings renovation go to interventions achieving on average a minimum of 30% primary energy savings. The Bulgarian plan also supports the deployment of energy-efficient street lighting systems.

Belgium

EUR 1 213 million in energy efficiency out of which EUR 1 208 million for energy efficiency in buildings. Relevant components: 1.1, 4.3, 5.1 and 7.1

The Belgian plan includes several reforms and investments related to energy efficiency in buildings, mainly directed to the renovation of residential, social housing and public buildings across regions. The renovations aim at covering around 200 000 dwellings (private and social) and 694 470 m² of public buildings, including schools, universities and sport centres, in the different regions. Other investments will support energy savings in public buildings, for instance through the equipment of 100 public school buildings with at least 100 000 cumulative m² of solar panels in Flanders, or the installation of solar panels and solar panels and heat

Croatia

EUR 1 751 million in energy efficiency out of which EUR 1 690 million for energy efficiency in buildings. Relevant components: 1.1, 1.2, 2.5, 6.1 and 7.2

The Croatian plan contains several reforms and investments for energy efficiency and post-earthquake reconstruction of buildings. Investments aim to renovate at least 619 000 square metres of residential buildings, 1 250 000 square metres of public buildings and 31 000 square metres of buildings with the status of a cultural good. The planned reforms include the adoption of renovation programmes to encourage in-depth

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renovation of buildings while paying particular attention to seismic risks and energy poverty. Additional reforms aim to reduce the administrative burden for applicants, develop systemic energy management and a new energy-efficiency financing model, educate and upskill the workforce, including through the introduction of a new adult learning program for workers from third countries.



Cyprus

EUR 234 million in energy efficiency out of which EUR 176 million in energy efficiency for buildings. Relevant components: 1.1, 2.1, 3.4, 6

Cyprus' plan includes various support schemes to implement energy efficiency measures in buildings and to combat energy poverty. One investment promotes energy efficiency renovations in buildings and/or facilities owned or operated by SMEs, municipalities, communities and the wider public sector. Another investment focuses on energy efficiency measures in at least 16 200 dwellings, including households of vulnerable electricity consumers, and addressing energy poverty in energy poor households as well as households with people with disabilities. Also, energy efficiency renovations of hospitals and the regeneration of Nicosia inner city are concerned, and several measures have been upscaled with REPowerEU.



Czechia

EUR 1 298 million in energy efficiency out of which EUR 1 298 million in energy efficiency for buildings. Relevant components: 2.1, 2.2, 2.3, 2.5, 2.8, 3.2, 3.3 and 7.3

The Czech plan includes a series of investments to increase the energy efficiency of residential and public buildings as well as reforms to streamline the process of renovation project preparation and for the reskilling of workers on new practices in energy efficiency construction and renovation. These investments aim at the renovation and revitalisation of residential dwellings, state buildings and other public buildings. These renovations aim at decreasing the primary energy consumption by 30%. The renovation of public buildings will include the renovation of 293 pre-school childcare facilities and the construction of 98 new ones, the renovation of 100 social care facilities and the construction of 76 new ones, the implementation of energy efficiency measures in railway station buildings

and the construction of energy efficient university facilities. The plan includes an investment on the modernisation of district heating distribution networks as well as an investment intended at improving the energy efficiency of public lighting systems. The REPowerEU chapter includes measures to provide advisory services on energy efficient renovation projects, build expertise and capacity in the area of energy efficiency and raise awareness with a focus on energy poverty.



Denmark

EUR 284 million in energy efficiency out of which EUR 243 million in energy efficiency for buildings. Relevant components: 3 and 8

The Danish plan includes a series of investments and reforms aiming to support energy savings for both private and public buildings. Investments focus on replacing oil burners and gas furnaces through the expansion of district heating grids into new areas and providing support to households to convert to electric heat pump systems. These investments also support insulation and the optimisation of the operation of the building. The REPowerEU has scaled up the original measure of the plan dedicated to subsidies for the replacement oil burners and gas furnaces. For public buildings, energy saving actions will prioritise regional and municipal buildings with the lowest energy performance certificate and buildings heated by oil burners and gas furnaces.



Estonia

EUR 76 million in energy efficiency out of which EUR 76 million in energy efficiency for buildings. Relevant components: 4

The Estonian plan includes a reform and two investments dedicated to the promotion of energy efficiency through building renovations. The reform focuses on reducing the administrative barriers to energy efficient renovations by advising apartment associations, private households and local governments on legislation, technical aspects and financing of renovations. Investments include the deep renovation of apartment buildings and a renovation support scheme for small residential buildings. Both investments aim to achieve at least an average level of primary energy saving of 30%.

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Finland

EUR 48 million in energy efficiency out of which EUR 0 million for energy efficiency in buildings. Relevant components: Pillar 1 component 3

The Finnish plan contains several reforms and investments targeting energy efficiency in buildings. The reforms intend to amend the existing land use and building act to reduce emissions from the entire life span of buildings and establish an action plan to phase out fossil oil heating in 2030, with concrete targets for reduction in the number of houses using this source of heating. In relation to investments, the Finnish plan supports research and innovation aimed to accelerate the development of low-carbon solutions in the built environment.

France

EUR 10 703 million in energy efficiency out of which EUR 10 163 million for energy efficiency in buildings. Relevant components: 1, 9 and 10

Component 1 of the French Recovery and Resilience plan focuses on financing a large-scale renovation programme to increase the energy efficiency of buildings. The component includes a revision of the thermal regulation of new buildings to improve energy performance, decarbonise the energy consumed, reduce the carbon impact of new buildings and adapt buildings to climate change. On the investments side, the plan finances a grant scheme for building owners to improve insulation, heating, ventilation or energy audit works for single-family houses or apartments in collective housing. The plan contains an investment for the energy renovation and major rehabilitation of social housing and an investment for the thermal renovation of public buildings, including hospitals and EHPAD (Residential Establishment for Dependent Elderly People). The REPowerEU chapter includes additional investments for energy efficiency renovations of public and private buildings, as well as a 'sobriety plan' aimed at boosting energy efficiency in buildings.

Germany

EUR 2 557 million in energy efficiency out of which EUR 2 557 million for energy efficiency in buildings. Relevant component: 1.3

The German plan includes an investment to support a large-scale renovation programme aimed at increasing the energy efficiency of residential buildings. This investment is expected to achieve on average a minimum of 45% of primary energy savings and potentially significantly more through bonuses for renewable energy and better classes of energy efficiency. These renovations are expected to cover 40 000 dwellings. The plan also includes at least four joint municipal living laboratories, projects that explore and demonstrate innovative solutions for the efficient and sustainable energy supply of urban neighbourhoods.

Greece

EUR 5 248 million in energy efficiency out of which EUR 2 599 million for energy efficiency in buildings. Relevant components: 1.2, 3.2, 3.3, 4.3, 4.6, 5.1, 5.2

The Greek plan contains several investments which support the energy efficient renovation of residential buildings (116 500 households), 80 hospitals and 150 public buildings, as well as the construction of new judicial buildings. The investments in energy efficiency of residential buildings also include deployment of energy management systems and e-mobility infrastructure. Regarding public sector buildings, the investment will be carried out with the involvement of energy savings companies (ESCOs). Another investment aims to upgrade street lighting infrastructures. The plan contains a reform to put in place an action plan to combat energy poverty and includes actions targeting economically vulnerable households through improved energy efficiency, thereby reducing their energy bills. Finally, the plan includes a REPowerEU reform to establish a roadmap for innovative energy efficiency interventions, including the introduction of non-grant financial instruments.

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Hungary

EUR 1 733 million in energy efficiency out of which EUR 1 272 million for energy efficiency in buildings. Relevant components: 1, 2, 6, 8, 10

Several measures under Hungary's RRP are dedicated to boosting energy efficiency. Two financial instruments of EUR 1 bn will be set up under the REPowerEU chapter to finance energy efficiency improvements of households (with at least 10% of the budget dedicated to energy poverty) and companies. Further investments aim to renovate a total floor area of 1 924 000 square meters in public buildings and higher education institutions. For these investments, the financed projects are required to achieve primary energy savings of at least 30%. Hungary is also expected to improve the energy performance of crèches and hospitals by renovating existing buildings and constructing new ones. In addition, at least 7 300 households will have their windows replaced as part of their energy system improvement package. To underpin these efforts, a reform will introduce minimum standards of 30% energy reduction for EU-funded renovation schemes, while another will give households (in particular if vulnerable or energy poor) the opportunity to receive technical assistance to apply for EU-funded residential energy efficiency schemes.

Ireland

EUR 60 million in energy efficiency out of which EUR 60 million for energy efficiency in buildings. Relevant components: 1.3 2.1

The Irish plan encompasses several investments that aim at assisting the public sector to implement energy efficiency investments and green technology solutions to reduce carbon emissions. The Public Sector's Energy Retrofit Program aims at fostering the modernisation of public building stock to reduce energy consumption and its carbon footprint. Another measure will finance the construction of a shared Government data centre that will lead to substantial energy savings (at least 50 %) and replace the existing inefficient data centre buildings.

Italy

EUR 26 778 million in energy efficiency out of which EUR 21 273 million for energy efficiency in buildings. Relevant components: M1C3, M2C3, M5C2, M6C1, M7

In its Recovery and Resilience plan, Italy includes a series of investments and reforms that aim at improving the energy efficiency of private and public buildings. The plan comprises a major investment ("Superbonus", EUR 13.9 billion) that finances the energy renovation of residential buildings in the form of a tax deduction over five years. Other investments comprise the renovation and requalification of justice buildings, and the progressive replacement of school buildings with more sustainable buildings. Italy has also committed to developing a more efficient district heating, which will lead to energy savings amounting to 20 KToe. Further investments aim at improving the energy performances of buildings in the culture and creative sectors, and EUR 1.3 billion for the renovation of public and social houses as part of the REPowerEU chapter. The plan also envisages several reform actions that aim to remove critical bottlenecks for the authorisation procedures for renewables and energy efficiency of buildings and simplifying and accelerating the procedures for energy efficiency interventions.

Latvia

EUR 268 million in energy efficiency out of which EUR 147 million for energy efficiency in buildings. Relevant components: 1

Latvia's RRP contains a series of support schemes aimed to reduce greenhouse gas emissions through energy efficiency measures both in the public and private sector buildings. In the residential sector, the measure consists in providing support for energy efficiency improvements in multi-apartment buildings. The measure is expected to deliver reduction of primary energy consumption in the order of 14 thousand MWh/year. In the public sector, energy efficiency-related stimuli will target municipal and infrastructure buildings as well as those owned by the central government, such as historical and judicial buildings. Overall, interventions in this sector are expected to deliver a reduction in primary energy consumption of 4 544 thousand MWh/year. Beyond energy efficiency in buildings, another measure will support Latvian businesses in improving energy efficiency and introducing renewable energy

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technologies and related research and development activities.

Lithuania

EUR 286 million in energy efficiency out of which EUR 286 million for energy efficiency in buildings. Relevant components: A1.2, A1.3, B.1.3, H.1.1

The Lithuanian plan addresses the challenges linked to energy efficiency in buildings through a substantial reform. This reform contributes to accelerating the building renovation process through (i) the updating and testing in practice of building renovation packages and standards, and the creation of a methodology for the development of sustainable cities; (ii) the creation of tools to simplify building renovation coordination, and technical assistance; (iii) the promotion of supply of construction products and services that speed up the renovation of buildings. Concurrently, the RRP aims to support the energy efficiency renovation of 1 106 000 m² of multi-apartment buildings.

Malta

EUR 66 million in energy efficiency out of which EUR 46 million for energy efficiency in buildings. Relevant components: C1-R1, C1-I1, C1-I2, C1-I3

Malta's RRP comprises three investments and one reform that address energy efficiency in buildings. One of the main investments consists in the renovation, including deep retrofitting, and in the greening of at least 9 232 m² of public buildings, and of at least 40 605 m² of private sector buildings that should lead to at least a 30% reduction of primary energy demand (PED) in each of the buildings. Similar measures target public hospitals, and two public schools and will serve as models for the renovation of other similar buildings. A complementary reform aims at developing a long-term renovation strategy to promote the renovation of Malta's building stock by 2050, and to train professionals in buildings renovation with a view to enhancing energy performance and increasing the use of renewable energy.

Netherlands

EUR 1 584 million in energy efficiency out of which EUR 1 584 million for energy efficiency in buildings. Relevant components: C3.2.I1 and C3.2.I2

The Dutch recovery and resilience plan aims to significantly improve energy efficiency, in particular for buildings. In order to achieve this objective, the Dutch plan first of all provides for an investment subsidy for sustainable energy and energy savings (ISDE). Under this program, more than 500 000 energy efficiency improvements, including solar boilers, thermal connections, insulation, heat pumps and electric stoves will be subsidised. While the ISDE program mainly targets households, the plan also contains a subsidy scheme to improve the energy efficiency of public real estate (such as buildings of local administrations or educational and health institutions). All these interventions will achieve primary energy savings of on average at least 30% for the dwellings or buildings concerned.

Poland

EUR 9 675 million in energy efficiency out of which EUR 9 375 million for energy efficiency in buildings. Relevant components: B1.1, B1.1.2, B1.1.3, B1.1.4, B1.2, B1.2.1, B3.4.1, B3.5, B3.5.1

The Polish plan aims to reduce greenhouse gas emissions from residential and public buildings while improving air quality and citizens' wellbeing. Reforms to improve the energy efficiency regulatory framework, including the national building renovation scheme to promote faster energy saving, the update of the National Air Protection Programme and the amended Regulation setting standards for solid fuels, will accelerate the replacement of polluting sources in heat and power generation and optimize energy systems in buildings. Additionally, the RRP contains investments in the renovation of heat sources for residential and public buildings, including the decarbonisation of district heating and improvements of the energy efficiency and decarbonisation of heating sources for single and multi-family dwellings, social facilities and schools. The installation of renewable energy installations in private buildings is also promoted.

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Portugal

EUR 7 042 million in energy efficiency out of which EUR 6 014 million for energy efficiency in buildings. Relevant components: C01, C02, C03, C04, C06, C07, C010, C011, C013, C019, C021

Representing 27% of the overall estimated expenditures of the plan, energy efficiency in buildings is a big priority in the Portuguese plan. Investments include building renovations and constructions increasing energy efficiency of public infrastructure, notably in health care facilities, schools, research facilities, cultural centres and government buildings. In addition, the plan will finance energy efficient building renovations and constructions for at least 26 000 households with the greatest needs and belonging to the most vulnerable groups. This investment is complemented by a reform to set up a national urgent and temporary housing plan, with a view to protecting and empowering the identified vulnerable groups. The REPowerEU chapter includes, among others, a reform to support citizens in the preparation and implementation of energy efficiency measures and to adopt sustainable behaviours regarding energy use, through increased energy literacy (Citizens Energy Spaces – Espaços Cidadão Energia). These structures will collaborate also with the newly created Energy Poverty Observatory, a new governance tool also part of the REPowerEU chapter.

Romania

EUR 5 330 million in energy efficiency out of which EUR 5 266 million for energy efficiency in buildings. Relevant components: 5, 6, 7, 10, 11, 12, 13, 14, 15 and 16

Energy efficient building renovations and constructions make up 30% of the climate-tagged measures in the Romanian plan, which shows the great importance put on it. In particular, the plan establishes a Renovation Wave fund backed by more than EUR 2 billion to finance energy efficiency actions to renovate 3.2 million m² of multi-family apartment buildings and 2.3 million m² of public buildings. Since Romania is one of the European countries most exposed to seismic risk, energy renovations will be carried out in parallel with seismic renovations to ensure a cost-efficient approach and a long-lasting effect of the investment. The investment aims to achieve at least an average level of primary energy savings of 30%. This investment and others are reinforced by new reforms. For example, a simplified

regulatory framework to support investments in green and resilient buildings aims to reduce by at least 50% the time required for the issuance of building permits. The Romanian plan integrates key principles of the European Green deal, such as promoting resource efficiency, nature-based solutions, biodiversity corridors, and circular economy. The REPowerEU chapter includes a reform introducing one-stop-shops to inform about energy efficiency renovation and an investment in energy efficiency renovations of single-family homes.

Slovakia

EUR 2 123 million in energy efficiency out of which EUR 1 760 million for energy efficiency in buildings. Relevant components: 2, 4, 6, 7, 8, 11, 12, 13, 15, 16

Energy efficiency measures in buildings represent over 27% of the estimated costs of the Slovak plan, which points to energy efficiency being a clear priority nationally. The plan contains several energy efficient investments and reforms for both private and public buildings. The highlight is the renovation of 28 224 single-family buildings and at least 307 122 m² of public buildings, with most of the renovations achieving on average at least 30% primary energy savings. Another example is a measure that aims to build new energy efficient hospitals, which also obtain the Building Research Establishment Environmental Assessment Method certificate (BREEAM). For the renovated hospitals, 30% of primary energy savings is to be achieved. The mentioned investments are complemented by reforms, such as the harmonisation of support mechanisms and the publication of an implementation plan to mobilise green renovations of family houses.

Slovenia

EUR 239 million in energy efficiency out of which EUR 197 million for energy efficiency in buildings. Relevant components: 1, 2, 3, 11, 12

The Slovenian plan includes a series of reforms and investments in energy efficiency in buildings. An Action Plan for the renovation of public buildings, will be adopted by end of 2025. On the investment side, 8 000 m² of residential buildings as well as 80 000 m² of public buildings of high administrative and social importance due to COVID-19 pandemic will be renovated in an energy efficient manner. In addition, the plan includes an investment to make tourist

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accommodation more sustainable and energy efficient. In terms of public buildings, one new highly energy efficient education institution and a Centre for seeds, nurseries and forest protection will be built. These newly constructed buildings will have a primary energy demand that will be at least 20% lower than the nearly zero-energy building (NZEB) requirement.

individuals in the lower half of the income distribution. These dwellings will have a primary energy demand that will be at least 20% lower than the nearly zero-energy building (NZEB) requirement.

Spain

EUR 25 588 million in energy efficiency out of which EUR 11 826 million for energy efficiency in buildings. Relevant components: 2, 11, 12, 14, 17, 26, 28

The Spanish plan includes a series of investments and reforms to support energy efficiency in buildings. In terms of reforms, the plan includes a Spanish urban agenda, Spain's long term renovation strategy, a housing law, a Law to improve the architectural landscape and the creation of 'one-stop-shops' for building renovations. On the investment side, the largest investments are to renovate at least 355 000 unique dwellings as well as 1.23 million m² of public buildings, both aiming to achieve a primary energy demand reduction of at least 30%. There is also a programme to construct at least 20 000 new highly energy efficient buildings for social rental purposes or at affordable prices, which will be built in particular where currently social housing is insufficient. The modified plan moreover includes a reform of the land law and a loan facility with at least EUR 4 billion of financing to facilitate the construction of new energy-efficient social and affordable housing.

Sweden

EUR 706 million in energy efficiency out of which EUR 639 million for energy efficiency in buildings. Relevant components: 1, 5 and 6

The Swedish plan includes two investments in energy efficiency in buildings. Both investments were scaled up with the extra funding made available from REPowerEU. The first investment is a public support scheme to incentivise property owners to renovate at least 2 246 000 m² of multi-family apartment buildings, which would usually not be profitable for the owners. The investments aim to achieve at least an average level of primary energy savings of 30%. The second investment plans to increase the supply of highly energy efficient rental and student housing by 6 720 new dwellings, which will ease access to housing for