

# Case study on the green transition: Energy efficiency in buildings

## 1.1 Introduction

### 1.1.1 Case study objectives

RRF Regulation (2021/241) states that the national RRFs should support the **green transition** through reforms and investments in green technologies and capacities, including biodiversity, energy efficiency, building renovation and the circular economy while contributing to the Union's climate targets, fostering sustainable growth, creating jobs and preserving energy security.

This case study aims to evaluate the RRF measures on their impact and achievements on **energy efficiency in buildings**. It aims to identify the success factors and bottlenecks or gaps that hinder effective implementation of measures targeting energy efficiency in buildings. Moreover, the study will assess the coherence with other EU initiatives, such as Renovation Wave and Long Term Renovation Strategies (LTRS) as well as relevance and added value of the relevant measures.

### 1.1.2 Thematic coverage

As one of the aspects related to the green transition and relevant to the REPowerEU, this case study will focus on RRF measures related to **energy efficiency, in particular energy efficiency of buildings**. Energy efficiency in general has been a focus area in many NRRFs with the second highest share of energy-related investments being dedicated to it after sustainable transport.

Energy efficiency in buildings has a significant role in terms of many of the EU's actions and objectives. First, a key action of the REPowerEU is energy savings. Furthermore, energy efficiency of the building sector plays an important role in meeting EU climate targets. Renovating public and private buildings has been identified in the EU's Renovation Wave<sup>1</sup> as an essential action to deliver on European Green Deal objectives and climate targets linked to energy efficiency, along with creating green jobs and improving lives. Increasing the renovation rate has also been promoted as one of the common challenges during the European Semester and is one of the seven European Flagship projects<sup>2</sup>. Member States identified individual targets and measures in their integrated national energy and climate plans (NECPs) and the National long-term renovation strategies (LTRS).

In addition to climate aspects, energy efficiency of buildings is closely related to other dimensions. As the focus of our case study is on the green transition pillar, we will mainly analyse the energy savings and contribution to the climate goals. However, it is necessary to also recognize the importance of other aspects. The measures and initiatives directed at buildings can include the following aspects, among others, energy poverty, quality of buildings, adaptation to climate change, energy security, and economic growth and recovery, e.g. stimulating local employment.

In the NRRFs, a total of 1381 measures in all the NRRFs have been linked to the pillar of green transition, either as a primary or secondary pillar. 1102 of them are investments while 281 are reforms. Figure 1 below shows how the measures are distributed among different policy areas, illustrating that sustainable mobility, energy efficiency,

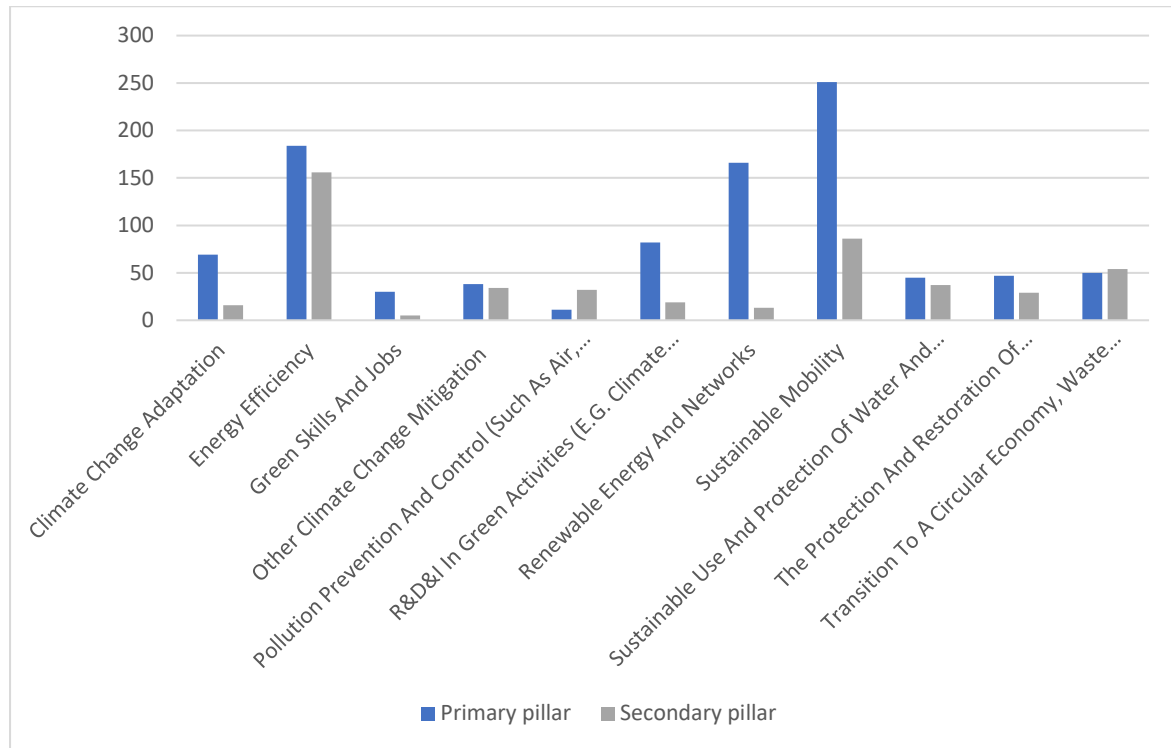
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<sup>1</sup> European Commission (2020) A Renovation Wave for Europe – Greening our buildings, creating jobs, improving lives, COM(2020) 662 final.

<sup>2</sup> European Commission (2021) Annual Sustainable Growth Strategy 2021, COM(2020) 575 final.

and renewable energy and networks are the most popular policy areas in terms of the number of measures. Similar distribution applies also in terms of allocated RRF funding: most funding is allocated to sustainable mobility and second most to energy efficiency, as shown in Figure 2.

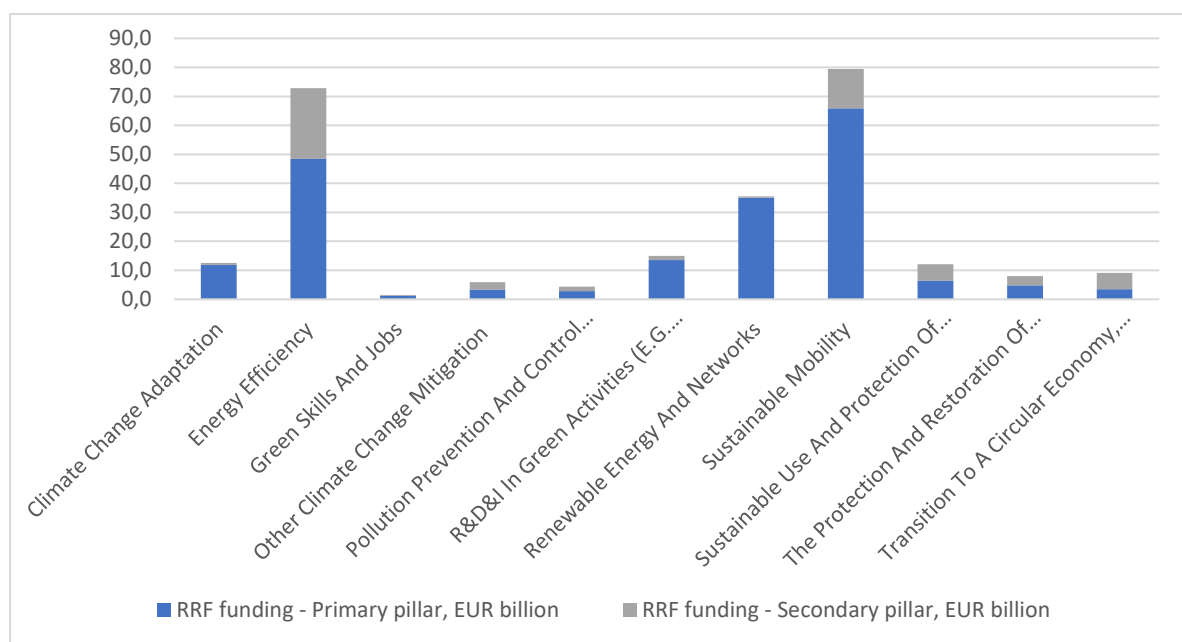
Figure 1 Number of measures under the green transition pillar, by policy area



Source: RRF Scoreboard, July 2023.

Note: some measures have green transition as primary and secondary pillars and are therefore counted in the figure twice.

Figure 2 Amount of allocated funding by policy area

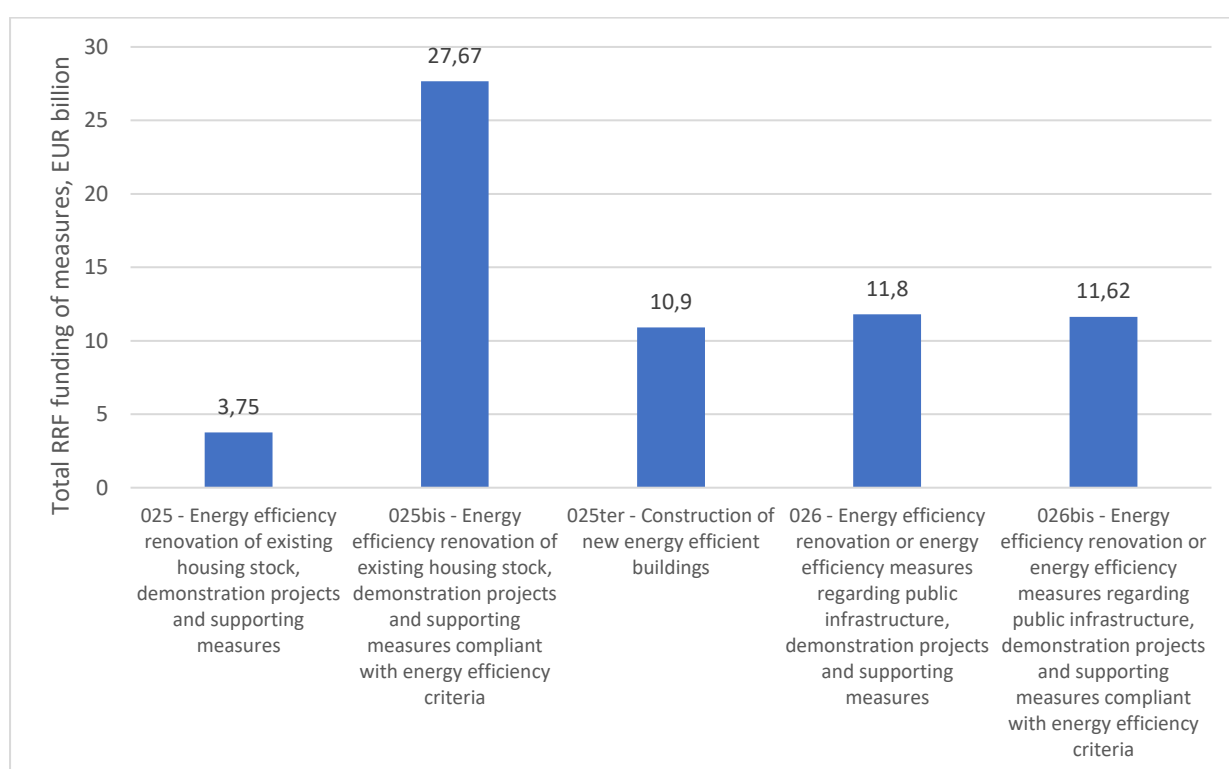


Source: RRF Scoreboard, July 2023.

Note: Some measures have green transition as primary and secondary pillars and are therefore counted in the figure twice. Sub-measures are also considered.

The RRF supports energy efficiency of buildings through a wide range of measures in the NRRPs. The RRF funding of all measures (304 investments; 52 reforms) linked to the policy area of energy efficiency is EUR 72.8 billion. For the measures (111 investments) linked with the relevant green objective intervention codes, the total allocation is somewhat less, **EUR 65.7 billion**. This difference is due to complex measures consisting of multiple components, of which some components do not directly impact energy efficiency and are not connected to the intervention field, but still are integral part of the overall measure. As the figure below shows, the biggest share, EUR 27.7 billion, of that amount is allocated to energy efficiency renovation of existing housing stock, demonstration projects and supporting measures.

Figure 3 Total RRF funding of measures under the green transition pillar and energy efficiency policy area, by green objective intervention field



Source: FENIX, July 2023. Note: Primary or secondary pillar of the measure is green transition, and primary or secondary policy area is energy efficiency. Sub-measures are also considered.

The relevant investments of the RRF provide a substantial contribution to the public investment required to support the Renovation Wave. Also, the high number of sub-measures within the investments shows that energy efficiency of buildings is a cross-sectional theme and there are measures among different components addressing the issue. For example, measures mainly targeting healthcare, education or culture can include sub-measures with objectives of renovating hospitals, educational institutions or cultural buildings to increase their energy efficiency, or to apply energy efficiency standards when constructing new buildings. Also, the number of reforms indicate the importance of legislative changes to support the investments and stimulate private financing, as well as overcoming other barriers to renovations.

Throughout the study, we focus on renovation measures rather than measures aiming at new constructions as the energy efficiency activities should incentivise improvements in existing buildings. Construction of new energy efficient buildings should be limited to specific situations, for example, when renovations are not effective or new buildings are needed to meet the demand.

### 1.1.3 Selection of relevant measures

As this study focuses on energy efficiency of buildings, we narrowed down the selection of green transition RRP measures. For the long list of measures, we selected the national RRP measures targeting buildings based on the following criteria in the:

- ▶ **The primary or secondary pillar is the green transition, and the policy area is energy efficiency.** This case study aims to analyse the measures targeting the green transition pillar and we therefore included only the measures that cover the pillar.
- ▶ Regarding the investments, **the Green Objective Intervention field targets energy efficiency of buildings**, i.e., is one of the following:
  - 025 - Energy efficiency renovation of existing housing stock, demonstration projects and supporting measures;
  - 025bis - Energy efficiency renovation of existing housing stock, demonstration projects and supporting measures compliant with energy efficiency criteria;
  - 025ter - Construction of new energy-efficient buildings;
  - 026 - Energy efficiency renovation or energy efficiency measures regarding public infrastructure, demonstration projects and supporting measures; or
  - 026bis - Energy efficiency renovation or energy efficiency measures regarding public infrastructure, demonstration projects and supporting measures compliant with energy efficiency criteria.

In addition, we selected measures that do not fulfil the criteria above, however, that are relevant to the topic, based on researchers' assessment.<sup>3</sup> The measures are listed in Table 12 in Annex 2<sup>4</sup>.

For each country, several **key measures** on energy efficiency in buildings were selected to be analysed further. The key measures are used as the **foundation** for the case study analysis. The key measures by country are presented in Annex 2, including a description, the related funding, and the associated targets and milestones up to 2023.

### 1.1.4 Country selection

The Member States' NRRPs were evaluated on the following four aspects below. We chose the countries based on their representation of diversity across the four aspects. This resulted in a selection of four countries: France, Bulgaria, Latvia, and Romania.

- ▶ The number of investments and reforms related to energy efficiency in buildings;
- ▶ The amount of RRF funds dedicated to the energy efficiency in buildings;
- ▶ The implementation status of the RRP measures; and
- ▶ The building stock and renovation rate in these countries.





In the below table, we provide short summaries of selected countries' building stocks, renovation landscapes and the relevant RRP measures. See Annex 2 for the lists of selected RRP measures per case study country.

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<sup>3</sup> This primarily related to the Bulgarian and Latvian measures in support of business and non-residential buildings under intervention field 024ter

<sup>4</sup> Note: in the table of all measures, we have combined some sub-measures together, and therefore the total number is smaller than the number in FENIX.

Table 1 Summary of case study countries

 <p>France</p>	<p>The French housing stock includes around <b>33.9 million residential buildings</b> and <b>6.1 million tertiary buildings</b>. The building sector in the country accounts for 45% of the national energy consumption and 25% of GHG emissions.</p> <p>Long-term Renovation Strategy:</p> <ul style="list-style-type: none"> <li>▶ <b>49% reduction of GHG emissions</b> in the building sector by 2030 (compared with 2015).</li> <li>▶ Tertiary buildings: Energy consumption reduction of 40% by 2030; Residential buildings: Energy consumption reduction of 22% by 2030.</li> <li>▶ Estimated investment need for <b>2019-2032: EUR 15-25 billion</b>.</li> </ul> <p>The French RRP includes one reform for a regulation promoting the energy efficiency of new buildings and seven investments targeting energy efficiency of buildings, including the renovation of public buildings, private homes and social housing. The funding allocated for the measures is <b>EUR 8.3 billion from the RRF</b>, which accounts for <b>20.6% of the total RRF allocation</b> of the country. Later, EUR 1.7 billion has been added on the energy efficiency in buildings from the REPowerEU allocation, resulting in a total of <b>EUR 10 billion RRF funding</b>.</p>
 <p>Bulgaria</p>	<p>In Bulgaria, the residential housing stock is dominated by socialist-era multi-family apartment buildings. Overall, <b>1.37 million residential buildings</b> are year-round occupied.</p> <p>Long-term Renovation Strategy:</p> <ul style="list-style-type: none"> <li>▶ 45% of the total Bulgarian building stock (60% of the existing residential buildings and 17% of the non-residential buildings) will need to be renovated by 2050.</li> <li>▶ Estimated <b>EUR 2.3 billion investment needs for 2021-2030</b>, EUR 5.3 billion (2031-2040) and EUR 5.96 billion (2041-2050).</li> <li>▶ An energy saving of 32% in the final energy consumption by 2030 is set as a target (compared to 2007).</li> </ul> <p>The RRP contains four relevant reforms and eight investments with a high share of RRF funding allocated to energy efficiency in buildings; <b>EUR 1.3 billion, 20.1% of the whole RRF allocation</b>.</p>
 <p>Latvia</p>	<p>The building stock totals 1.18 million buildings, of which <b>1.04 million are residential buildings</b>, and its building stock from the Soviet era requires comprehensive renovating.</p> <p>Long-term Renovation Strategy:</p> <ul style="list-style-type: none"> <li>▶ <b>Renovation of 30% of the multi-apartment buildings</b> by 2030.</li> <li>▶ Estimated investment needs for renovating the building stock by 2030 are EUR 1.5 billion for residential apartment buildings; EUR 1.5 billion for private houses; and EUR 1.6 billion for non-residential (public) buildings. Totalling 4.6 billion euros in financing needed.</li> </ul> <p>The Latvian RRP includes a total of four investments supporting energy efficiency in buildings, allocated <b>EUR 0.135 billion</b> from the RRF, accounting for <b>7.4% of the total RRF funds allocated to Latvia</b>.</p>
 <p>Romania</p>	<p>The Romanian building stock includes <b>5.3 million residential buildings</b> and a total of 0.3 million public buildings. In addition, higher seismic risk in Romania brings a special feature to the building sector.</p> <p>Long-term Renovation Strategy:</p> <ul style="list-style-type: none"> <li>▶ Investment needs of <b>EUR 12.8 billion for 2020-2030</b>, from both private and public funding to reach renovation targets in the recommended scenario.</li> <li>▶ A 9% reduction of final energy consumption in 2030 and a cumulative 24% GHG emission reduction in 2021-2030 (compared to 2020).</li> <li>▶ 77% of the total floor area of the building stock will be renovated or rebuilt by 2050.</li> </ul> <p>The RRP includes 17 investments and one reform related to energy efficiency in buildings. In total, the RRF funding allocated to renovations is <b>EUR 4.7 billion</b>, which represents <b>16.2% of the total RRF allocation</b>. Energy-efficient building renovations and constructions make up to 30% of the climate-tagged measures in the Romanian RRP.</p>

## 1.1.5 Methodology

When analysing the selected RRP measures individually and together, we aim to answer the evaluation questions presented in Table 2 below.

Table 2 Evaluation questions

Criterion	Question	Relevant EQ
Effectiveness	A. What is the current state of play of the implementation of the measures related to energy efficiency in buildings?	EQ 4.5
	B. Which outputs/results have been achieved (e.g. GHG reductions, climate adaptation and transition of the energy systems)?	
	C. How effective is the design of the measures? To what extent are the combined RRP measures effective?	
	D. What barriers have been encountered, for example, to what extent have external factors such as rising material prices, and shortage of skilled labourers, hindered the implementation of the energy efficiency measures?	EQ 5.1
Coherence	E. To what extent were the proposed RRP measures guided by the EU's priorities enshrined in the Renovation Wave and coherent with the national long-term renovation strategies?	
	F. To what extent are the RRP measures on energy efficiency in buildings coherent with the REPowerEU plan?	
	G. To what extent have synergies between the RRP measures on energy efficiency in buildings and other EU and national programmes been identified and exploited?	
	H. To what extent the measures are coherent with the 'do no significant harm' principle?	
EU-added Value	I. Would the measures still have been implemented without the RRF? Are the measures based on existing measures?	EQ 21 EQ 22
	J. How are the measures contributing to going beyond existing plans and targets for energy efficiency and renovation?	EQ 21
Relevance	K. To what extent will the RRP measures on energy efficiency in buildings remain relevant and feasible to implement until 2026?	EQ 23
	L. To what extent are the RRP measures on energy efficiency in buildings relevant considering the needs identified in the Member States?	
	M. To what extent will the RRP measures on energy efficiency in buildings remain relevant considering new policies such as the proposed revision of the Energy Performance of Building Directive (EPBD)?	

To answer the questions, we first provide an overview of the context of renovation and energy efficiency policies in the EU. Second, we analyse the progress of the implementation, effectiveness, coherence, EU-added value and relevance of the measures based on the country-specific analysis. The analysis is based on the findings of country-specific analysis. In our analysis, we draw on a range of sources:

- (1) **Desk research:** For each of the four Member States selected, we started with desk research including the NECPs, LTRS, and NRRPs for each Member State. This review was complemented by other relevant studies that provide further background on the topic as well as national documents from the selected Member States.
- (2) **Semi-structured interviews:** To assess the appropriateness of measures in meeting targets, we conducted interviews with stakeholders, including implementing ministries. The interview questions are derived and adapted to each Member State based on the desk research. A list of interviews for each country case study is provided in Annex 3.
- (3) **Roundtables:** To go beyond reviewing the planned measures and identify the progress in implementation, potential problems, and the integration of the measures with existing national measures supporting energy efficiency, we organized a roundtable with representatives in charge of the implementation of the measures in the countries under study.

The case study report presents the EU-context of buildings renovations and energy efficiency in Section 1.2. Next, Section 1.3 presents and discusses the findings of the effectiveness, coherence, EU-added value and relevance of the relevant measures. Finally, we draw conclusions based on the analysis. In Annex 1, each country is introduced with an overview of its building stock, renovation rate and targets as well as a general description of energy efficiency in building measures in each national plan and a description of data on measures selected for specific analysis. Annex 2 lists all selected measures used in the case study analysis.

## 1.2 Background to renovation and energy efficiency in the EU

The energy efficiency of the European buildings stock plays a crucial role in achieving the EU 2030 and 2050 climate targets. Based on the estimates in the Renovation Wave strategy<sup>5</sup>, the additional investment in renovation to meet the Fit-for-55 target, including decarbonising heat in buildings, is €275bn per year until 2030.

In total, the investment needs add up to over 3.5 trillion by 2030<sup>6</sup>. This is the largest investment gap in comparison with other sectors. In addition to higher public investments, it will be key to mobilise private financing in building renovations too.

The following table shows the key indicators relevant to the building stock of the case study countries.

Table 3 Key indications related to the building stock and renovations in case study countries

	EU	France	Bulgaria	Latvia	Romania
Number of residential housing units (millions)		33.89	4.47	1.04	8.83
Number of tertiary housing units (millions)		6.13	0.59	0.14	0.88
Renovation rate, energy-related renovations, residential (average 2012-2016)*	12.3%	13.3%	20.1%	9.8%	24.1%
...medium-depth renovations*	1.1%	1.0%	1.30%	0.9%	1.3%
...deep renovations*	0.2%	0.2%	0.1%	0.0%	0.1%
Renovation rate, non-residential (average 2012-2016)*	9.5%	6.0%	17.9%	9.0%	19.3%
...medium-depth renovations*	2.1%	1.4%	5.3%	1.3%	1.9%
...deep renovations*	0.3%	0.2%	0.6%	0.3%	0.4%
Energy consumption in residential buildings (Mtoe)		39057.3	2229.7	1231.0	7749.7
Energy consumption in tertiary buildings (Mtoe)		23.28	1.23	0.59	1.97
Share of residential dwellings built before 1945		17.7%	23.6%	25.0%	12.3%
...between 1945 and 1969		13.7%	25.6%	13.8%	29.1%
... between 1970 and 1999		39.2%	44.2%	42.4%	34.4%
... after 2000		26.3%	19.7%	21.9%	22.6%

Source: EU BSO database, 2017 (energy consumptions from 2018).

\* % of the stock, general renovation rate includes also light renovations of less than 30% primary energy savings. Source: Ipsos and Navigant, 2019.

### 1.2.0 EU legislation addressing energy efficiency of buildings

The **Renovation Wave**<sup>7</sup>, a strategy launched by the Commission in 2020, aims to achieve the dual goal of energy gains and economic growth related to the buildings sector. It introduced a goal of doubling annual energy renovation rates by 2030, leading to emission reductions but also an increase in living quality as well as the creation of additional green jobs in the construction sector. The strategy refers to following seven main principles, which we take into consideration when evaluating the coherence of the RRP measures compared with other initiatives:

<sup>5</sup> European Commission (2020), A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives.

<sup>6</sup> E3G (2021), Renovate2Recover: How transformational are the National Recovery Plans for Buildings Renovation?

<sup>7</sup> European Commission (2020), [Renovation wave](#).



1. Energy efficiency first;
2. Affordability;
3. Decarbonisation and integration of renewables;
4. Life-cycle thinking and circularity;
5. High health and environmental standards;
6. Tackling the twin challenges of the green and digital transitions together; and
7. Respect for aesthetics and architectural quality.

The **Energy Performance of Buildings Directive (EPBD)** is a key piece of legislation aiming at improving the energy efficiency of buildings across member states. The directive sets out specific requirements and targets to promote energy-efficient construction, renovation, and operation of buildings. The current revised EPBD in force dates from 2018, and it includes, among others, the following requirements:

- ▶ **Long-Term Renovation Strategies (LTRS):** Each Member State is required to develop and submit its national LTRS to the European Commission. The LTRSs are designed to outline a roadmap for the energy-efficient renovation of buildings over an extended period, typically spanning 30 years or more. The goal is to accelerate the pace of building renovations to significantly improve their energy performance, reduce greenhouse gas emissions, and achieve a low-carbon and sustainable building stock.
- ▶ **Minimum Energy Performance Standards (MEPS):** The directive requires Member States to set cost-optimal minimum energy performance standards for new buildings and major renovations, regarding primary energy use, carbon emissions and renewable energy sources.
- ▶ **Nearly Zero-Energy Buildings (nZEBs):** The EPBD promotes the concept of nearly zero-energy buildings, where the building's energy needs are largely met through renewable sources or energy generated on-site.

The Commission proposed further updates to the Directive in December 2021<sup>8</sup>. One of the important changes of the EC proposal is the **harmonisation of the Energy Performance Certificates** in order to be able to compare the energy classes of buildings across Europe.

Another of the key changes proposed is the introduction of **minimum energy performance standards (MEPS)**. They aim to ensure a higher renovation rate but also to mitigate the negative social impact related to it. It should encourage a gradual phase-out of the worst-performing buildings with standards set at the EU level, focusing on renovating buildings with the highest potential for decarbonisation, energy poverty reduction and social benefits. It is noteworthy that the Council of the EU disagreed with part of the timeline proposed by the Commission.

- ▶ Regarding new public buildings, the Commission's proposal makes a step forward from the current Nearly Zero-Energy Buildings (nZEB) to **zero-emission building (ZEB)**. It requires new public buildings to be zero-emission by January 2027 and all new buildings as of January 2030.
- ▶ Regarding existing buildings, the proposal requires public buildings and other non-residential buildings to reach at least harmonised Energy Performance Certificates (EPC) label F in January 2027 and label E in January 2030. Residential buildings will have to be at least EPC class F by January 2030 and class E in 2033.

The recast of the EPBD also proposes to replace the LTRSs with **National Buildings Renovation Plans**. These will have a stronger focus on financing the renovation and ensuring the availability of skilled workers to proceed with the sustainable renovations but also promote financial mechanisms and incentives and set up one-stop shops.

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<sup>8</sup> European Commission (2021), [Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the energy performance of buildings](#).

Moreover, the proposal mentions a few examples of **financial initiatives** that could be used to support investments such as energy efficiency loans and mortgages for building renovation, energy performance contracting, on-tax schemes, on-bill schemes, guarantee funds, and funds targeting deep renovation. Finally, the proposal includes a definition of deep renovation and the introduction of building renovation passports.

In addition to the EPBD, the **Energy Efficiency Directive (EED)**<sup>9</sup> sets additional targets, such as the obligation for Member States to make energy-efficient renovations to at least 3% of the total floor area of buildings owned and occupied by central governments. In July 2023, an agreement was reached to amend the EED, including increasing the legally binding target of reduction of energy consumption by 2030 from 9% to 11.7%<sup>10</sup>.

### 1.2.0.1 ‘Do no significant harm’ (DNSH) principle

The Regulation establishing the RRF provides that no measure included in a Recovery and Resilience Plan (RRP) should lead to significant harm to environmental objectives within the meaning of Article 17 of the Taxonomy Regulation. The assessment of the RRFs should include an assessment ensuring that each in the plan complies with the ‘do no significant harm’ (DNSH) principle. Even though all measures have to be addressed, the DNSH assessment can take a simplified form for the ones that have no or an insignificant foreseeable impact on all or some of the environmental objectives. The simplified form is unlikely to be applied to measures in certain areas, such as energy, as there is a higher risk of having an environmental impact. However, for some simple energy efficiency measures, only a brief justification could be considered to prove compliance with DNSH for the climate change mitigation objective.<sup>11</sup>

### 1.2.0.2 REPowerEU

The Commission presented the REPowerEU plan<sup>12</sup> in May 2022 and published the updated guidance on recovery and resilience plans in February 2023. Formally the Regulation on REPowerEU entered into force in March 2023. Using the Fit for 55-package of proposals as a basis, and complementing the actions to secure energy supply and storage, the purpose of REPowerEU is to help Member States: (1) save energy; (2) produce clean energy; and (3) diversify the energy supplies. The main objective of REPowerEU can be seen as twofold: the short-term aim to end dependency on Russian fossil fuels as soon as possible, and the aim to secure long-term sustainability, cost-effectiveness and energy supply.

Most of the Member States submitted the REPowerEU chapters to the Commission as of end of August 2023, requesting for additional funding to broaden existing measures or to include additional measures in the RRFs. Of the case study countries, only France has published its REPowerEU chapter as of the end of August 2023. Romania has submitted their request to the Commission, however the REPowerEU chapter has not been published.

## 1.3 Findings

This section discusses the key evaluation criteria: effectiveness, coherence, EU-added value and relevance of the RRF measures supporting energy efficiency of buildings.

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<sup>9</sup> [Energy Efficiency Directive \(EED\) 2012/27/EU](#).

<sup>10</sup> European Commission, 25 July 2023, [European Green Deal: Energy Efficiency Directive adopted, helping make the EU ‘Fit for 55’](#).

<sup>11</sup> European Commission (2021), Technical guidance on the application of ‘do no significant harm’ under the Recovery and Resilience Facility Regulation

<sup>12</sup> European Commission (2022), [REPowerEU](#).

### 1.3.0 Effectiveness

#### Summary

Building on the analysis of the key measures, we find that **France** and **Romania** are progressing rather well in terms of the milestones and targets related to its measures supporting on energy efficiency of buildings. Both countries have fulfilled or completed all their milestones and targets that were due in 2022. Two Romanian milestones due in 2023 are on track. **Latvia** is progressing having fulfilled three out of four of its milestones/targets in 2022. **Bulgaria** is lagging behind the indicative timelines of their milestones and targets, mainly due to the political instability in the country. The country has completed one milestone related to one of its reforms, however the remaining seven milestones and targets of the key measures in 2022 were not completed. Additionally, one milestone due in the end of 2023 is on track.

It is too early to draw conclusions about energy savings impacts of the implemented measures and investments due to the long-term nature of construction projects. However various outputs have been achieved, which are mostly presented in terms of published calls, number of applications and granted projects, as well as type of projects that have been granted support. Nonetheless, availability of information of results, particularly quantitative results, of different measures differs significantly between countries.

Regarding **depth of renovation**, we found mixed results as the Member States meet the required threshold for medium-depth renovations; but generally the measures do not target deep renovations. However, there are some exceptions, as the French MaPrimeRénov' incentivises deeper renovation through bonuses to beneficiaries based on the energy saving obtained. The Romanian Renovation Wave Fund contains a specific call for deep renovations and has earmarked EUR 255 million for it.

Apart from Latvia, all countries provide **enabling reforms and technical assistance** to ensure the effectiveness of the grants provided. For example, the French plan foresees a reform of the thermal regulation of new buildings as well as a housing policy reform. France also has a pre-existing public scheme that provides technical assistance. Bulgaria's plan includes several reforms with the one to create one-stop shops being key in providing technical assistance to citizens and businesses. Finally, Romania does not provide any technical assistance, but has a reform supporting the energy efficiency investment measures.

In terms of **targeted stakeholders**, the majority of measures target private building owners with a few targeting public buildings. The French plan differentiates between household income and provides up to 90% financing for low-income households. Bulgaria is introducing a definition and criteria for energy poverty which will allow better targeting of vulnerable households. Romania provides 100% financing, which is positive for poorer households, but also sets the wrong incentives.

Regarding the **sufficiency of funding** and **use of private financing**, we find the French, Romanian and Bulgarian plans to be ambitious and greatly contributing to the renovation wave in their countries. The Latvian plan falls however short of what is needed considering their current investment gap in renovation. Romanian plan also consider ways of attracting more private financing by introducing a financial instrument.

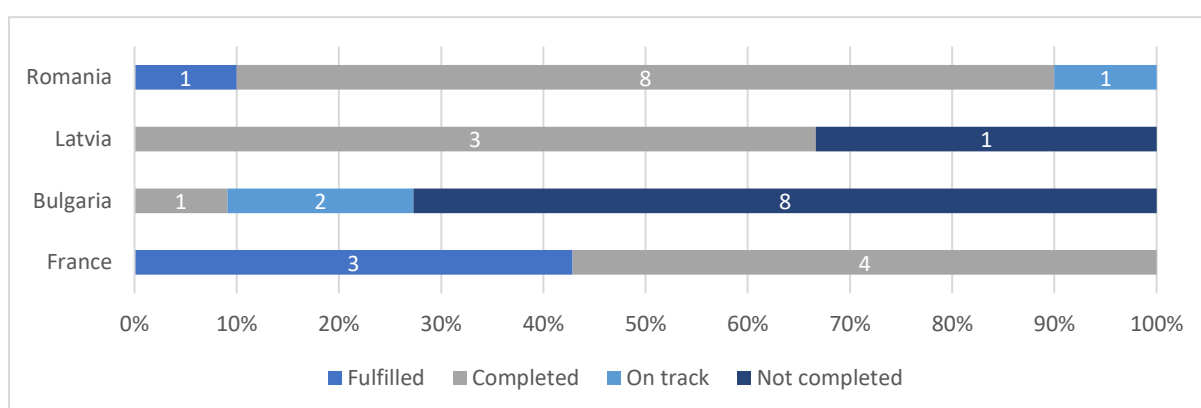
Common challenges for all the countries are lack of skilled workforce and recent inflation. The lack of labour is an issue especially in Romania, Bulgaria and Latvia, and rising material prices cause a risk for the implementation of all the measures.

A. *What is the current state of play of the implementation of the measures related to energy efficiency in buildings?*

As Figure 4 below shows that the progress of the key measures differs between the case study countries. Based on the completion status<sup>13</sup> of the milestones and targets, we find the following:

- ▶ **France is well advanced** with most of its measures focused on the first years of the RRP timeline. France has successfully completed or fulfilled all the scheduled milestones and targets. The size of the French allocation on energy renovation measures, EUR 8.3 billion, is a significant contribution to the objective of reducing CO2 emissions and boosting energy efficiency of buildings. In addition, France has allocated national funding for some of the measures, e.g. MaPrimeRenov, in the France Relance programme.
- ▶ **Latvian RRP** includes four milestones related to relevant measures have an indicative completion year before 2023, of which three have been completed. All of them are related to **adopting the legal frameworks and opening the funding schemes** as a result. RRP measures have clear energy-saving targets for the building sector (the expected reduction in primary energy consumption of these measures is 23,423 MWh/year). Nevertheless, the targets are relatively modest, in comparison with the potential of savings.<sup>14</sup>
- ▶ The **progress of the Bulgarian reforms have been delayed** and the key milestones were not reached or completed. The main reason for the delays is the **political turmoil** in the period 2021-2023, and the difficulties in forming and retaining a stable majority governing coalition to implement the reforms. The amendments to the Condominium Ownership Management Act, as well as to the Energy Act (on energy poverty definition), have been delayed considerably. By now, both Acts have been adopted by the Bulgarian Parliament. In regard to the investments, all measures focused on renovation of the building stock (including residential buildings, public buildings, industrial buildings, and buildings in the services and tourism sector) have been launched and have seen substantial interest from the public. The completion of the investments is expected in mid-2026.
- ▶ The energy efficiency **measures in the Romanian RRP are well on track**. It includes 10 milestones related to relevant measures which are initially scheduled to be achieved by the end of 2023. 8 of these milestones are completed, one is fulfilled and one is on track. Completed milestones include the publication of calls and ministerial orders which are prerequisites for achieving the energy savings and GHG reductions.

Figure 4 Progress of milestones and targets of the key measures



Source: FENIX, July 2023.

<sup>13</sup> The progress status is based on the European Commission FENIX database. When a Member State has reported the milestone or target to be achieved, it is completed. When the Commission has approved the completion, it is fulfilled.

<sup>14</sup> In the Latvian LTRS, it is mentioned that the indicative potential annual energy savings of, e.g. private buildings only, is 69 857 MWh. However, this covers all the private buildings while the number of buildings targeted by the RRP measures is significantly lower.

## B. Which outputs and results have been achieved?

In general, for all Member States, it is too early to draw conclusions on impacts in terms of climate mitigation, GHG reductions, or climate adaptation. Especially in the context of renovations and constructions, as the investments often have a long-term nature. Also many of the milestones and targets have indicative timelines closer to 2027 than 2021, with only France being an exception. Ambitions level vary greatly though between the four countries, with the Latvian RRP, three investments, being the least ambitious, of the selected countries, when it comes to including relevant measures in the NRRP. Despite the low RRF allocation, Latvia has allocated other substantial funding in energy efficiency in buildings during the past years, for example in the scope of EU structural funds. The other three countries are much more ambitious in their NRRPs, especially Romania (17 investments and 1 reform) and France (7 investments and 1 reform) which put a strong focus on investments. In contrast, Bulgaria's RRP (8 investments and 4 reforms) has a lower total funding amount, but is also tackling much needed reforms.

Table 4 shows the identified results related to the key measures where the information was available. So far, most investment measures have focused on launching calls, assessing proposals, signing contracts and other administrative actions. Thus, the actual construction works have yet to be taken place. An exception to this is the MaPrimeRénov' scheme, which has supported a large number of renovations already.

Table 4 Outputs of the key measures

	Measure	Identified outputs
FR	I: Energy renovation of private housing (MaPrimeRénov)	<ul style="list-style-type: none"> <li>Amount of total funding linked to the granted projects: EUR 11 billion.</li> <li>Granted projects: 864,694 dwellings.</li> <li>For the projects completed by the end of 2022, the total energy savings reached were 3.0 TWh. For all the projects granted support by 2022, estimated energy savings are 5.3 TWh.</li> <li>The renovations supported by the scheme mainly concern heating and domestic hot water: in 2022, they accounted for 82% of energy savings for 72% of actions (respectively 85% and 76% in 2021). Heat pumps alone represent 57-59% of total energy savings for only 21% of actions. The insulation of walls, roofs, attics and windows represents nearly a quarter of actions for 16% of energy savings in 2022.</li> <li>The scheme was extended from low-income households to all households from 2021 which led to the redistribution of the income groups: the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> income deciles represent only 40% of applications in 2022, compared to 36 % for the 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> deciles.</li> </ul>
	I: Energy (Thermal) renovations of public buildings	<ul style="list-style-type: none"> <li>Two calls were launched for the state-owned buildings in autumn 2020: one targeting higher education and research buildings and universities, and one for all other buildings.</li> <li>Number of public buildings where a renovation contract has been notified: 4051 buildings.</li> <li>Number of local authority projects supported: 265 buildings.</li> </ul>
BG	I: Support for the renovation of building stock	<ul style="list-style-type: none"> <li>Residential sector: the first call was completed (100% grant funding), and the second round of calls opened (80% grant funding). 3,068 project proposals were submitted totalling EUR 2 billion under the first call component.</li> <li>Non-residential sector: the call for public-buildings, Bulgarian Academy of Science buildings and buildings in industry, services and tourism have been launched and some are still ongoing. In total, at least 866 buildings are expected to be renovated in the non-residential sector.</li> </ul>

LV	I: Improving the energy efficiency of multi-apartment buildings	<ul style="list-style-type: none"> <li>• Number of applications: 39 multi-apartment buildings, of which a capital discount (subsidy) has been reserved for the renovation of 8 apartment buildings.</li> <li>• The amount of the reserved capital discount is EUR 2.77 million, equalling a primary energy reduction of 5,833.69 MWh per year.</li> </ul>
RO	I: The Renovation Wave Fund	<ul style="list-style-type: none"> <li>• Two rounds of calls have been launched.</li> <li>• The first round of calls: 970 granted projects; and the second round: 603 granted projects.</li> <li>• The total value of these projects: EUR 2.67 billion.</li> <li>• Biggest share of financing has been granted in moderate energy renovations of public (EUR 892.8 million) and residential buildings (EUR 797.8 million). EUR 292.2 million was granted for deep renovations of public and residential buildings.</li> <li>• EUR 230.1 million was granted in projects of moderate energy renovations of multi-apartment buildings at risk of poverty and social exclusion.</li> </ul>

See Annex 1 for the sources and more information.

### C. *How effective is the design of the measures? What extent are the combined RRP measures effective?*

In the following, we analyse certain aspects related to the effectiveness and successful implementation of measures focusing energy efficiency of buildings: (1) Depth of renovation, (2) Technical assistance and supporting reforms, (3) Targeting different stakeholders, and (4) Capacity to attract private financing and strengthening of financial market.<sup>15</sup>

#### 1. *Depth of renovation*

For RRF measures to be qualified as contributing to the threshold of 100% climate-related spending, the European Commission set a minimum of 30% energy saving recommendation.<sup>16</sup> This minimum translates to medium-depth renovation. A deep renovation would include significantly more ambitious energy savings. According to a definition used in the Renovate2Recover report, deep renovations reduce energy demand by at least 60% (for the worst-performing buildings) or result in an energy demand of 80kWh/m<sup>2</sup>/year (for buildings of medium level of consumption).

The Renovate2Recover<sup>17</sup> study finds that the vast majority of renovation measures in the NRRPs have adopted the minimum requirement of 30% energy savings to qualify for the climate eligibility thus meeting the threshold for medium-depth renovation. However, it also finds that Member States have not put in place incentives to reach higher levels of energy savings. There is a concern that there is a lack of measures that incentivise deep renovations which are necessary to meet EU climate targets in the building sector.

Our research generally confirms the findings from the Renovate2Recover report. The measures for France, Romania, Bulgaria and Latvia meet the requirements for medium renovation and that there is a lack of measures for deep renovations; however, we also see a few exceptions in specific countries.

Most of the analysed **French measures do not set clear targets going beyond the recommended 30% of energy savings**, meaning that the NRRP mainly aims at medium-depth renovations rather than deep renovations.

<sup>15</sup> These four criteria were selected as they are generally noted as key aspects of effectively designed energy efficiency measures: 1) whether the measure is only superficial or addresses also deep renovations; 2) whether sufficient support is provided in form of technical assistance or supporting reforms to ensure uptake of the measure; 3) whether also stakeholder groups are targeted that are not easily reached with renovation measures (e.g. poorer households); 4) whether sufficient funding is available and additional private financing is being attracted.

<sup>16</sup> For measures that have lower primary energy savings than 30%, the contribution to the climate contribution can be 40%. All key measures in the study qualify under the 100% climate coefficient. The construction of new energy efficient buildings qualify for 40% climate financing.

<sup>17</sup> E3G (2021), Renovate2Recover: How transformational are the National Recovery Plans for Buildings Renovation?

However, under the MaPrimeRenov' measure, beneficiaries can receive bonuses based on the energy savings obtained which incentivise deeper renovations.

The **Renovation Wave Fund in Romania contains special targets for deep renovations** and has funding set aside for it. There is up to EUR 255 million earmarked specifically in the NRRP to be invested in projects with energy savings larger than 60%. These savings must be verified through an energy audit report. Nonetheless, the largest share of funding available only requires a minimum of 30% primary energy savings.

The deep renovation rate is low in Latvia, due to a lack of private sector involvement to scale-up renovations, lack of trust among stakeholders<sup>18</sup>, and lacking awareness of the existing opportunities. Additional public funding and government support through the RRP might therefore increase the private investments. Renovations supported by the RRP measures, require **at least medium-depth renovations**, but do not incentivise going beyond it.

Similarly, in **Bulgaria**, the RRP measures **do not differentiate between the level of renovation targeted**, though a minimum of 30% energy savings is a requirement for eligibility.

## 2. *Technical assistance and supporting reforms*

In order to ensure the use of public funds and increase the uptake of private financing, the investments should be linked with reforms and/or with other enabling measures, such as capacity building, developing skills, awareness raising and support to beneficiaries. The Renovate2Recover<sup>19</sup> report concludes that many of the plans do not link the investments to other enabling measures, present clear provisions on how to attract private finance or combine the measures with other EU or national funding schemes. However, based on the examples from the selected countries, we do see some connections between the investments and reforms and enabling measures.

The **French plan** contains a **significant reform on the thermic regulation of new buildings**, which can be key to promoting good practices in the domain, as well as a **housing policy reform**. The first mentioned reform includes, among others, a ban on the installation or replacement of oil boilers, implementation of new environmental regulations for new buildings (so-called RE2020 regulation), and harmonisation of eligibility criteria for renovation incentive schemes. The housing policy reform continues with an already started track towards more efficient, clearer and simpler public housing policies, and is especially targeted at lower-income households. Both of these measures are in progress as some relevant legislative changes are already adopted.

However, the French RRP **lacks broader supporting measures**, such as capacity building, awareness raising and information measures to enable better-functioning markets in the building sector. Nevertheless, **pre-existing public schemes are already providing similar technical assistance**, e.g., Public Service for Housing Energy Performance (SPPEH) which offers information and advice.

The **Latvian RRP does not include supporting measures**, such as technical assistance or capacity building for homeowners, that could enhance the effectiveness of the measures. Latvia is facing issues with house owners and associations lacking information and awareness of the schemes or being sceptical about the uptake of such projects and the potential return of investment. Therefore, the role of supporting assistance could have great significance in implementing the measures efficiently.

The **Bulgarian RRP includes four reforms** related to energy efficiency of buildings, two of which are **regulatory reforms**. One of the reforms aims to create **a one-stop shop** with the objective of integrating all the necessary information and services needed for energy renovations, including the available EU funding. The aim is to open physical one-stop shops across Bulgaria's regions to reduce the administrative burden for both, households and businesses. The reform is outstanding, but could greatly improve the technical assistance provided to citizens. Similarly, **amendments to the Condominium Ownership Management Act** address barriers in energy efficiency

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<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

investments for residential buildings. The amendments will simplify the decision-making and approval process of renovation works by general assemblies in multi-family buildings or homeowner association, through allowing hybrid digital meetings and reducing the required quorums.

**Romania** has included **one regulatory reform** directly supporting the relevant investments in the RRP. The reform aims to achieve a simplified and updated regulatory framework to support the implementation of transition to greener and more resilient buildings. There are **no specific measures to provide technical assistance or raise public awareness**. However, they do organise regular monthly meetings for the beneficiaries of the Renovation Wave fund support to provide technical support. As Romania has a high share of owner-owned housing, it could benefit from a stronger emphasis on technical assistance. An additional investment aims at **strengthening the professional capacity** of professionals and workers in the renovation sector by developing trainings on energy efficiency construction, which helps to tackle the issue of a lack of trained workforce. In their REPowerEU chapter in the updated NRRP, Romania plans to start a one-stop shops to provide advice on energy efficiency of buildings, especially for residential buildings owners<sup>20</sup>.

### 3. *Targeting different stakeholders, particularly vulnerable households*

The **majority of the covered measures target households or other private building-owners**. As there are differences in the support coverage between the measures and countries, there are also differences in which type of beneficiaries usually apply for or receive the support. For example, the income levels of beneficiaries may differ based on the design of the measure.

MaPrimeRenov, the **French** measure aimed at energy efficiency renovations of private buildings, has been popular among private households, especially among middle-income households. The aid was initially targeted to only low-income households but was extended to cover all households in 2021. Now, the amount of aid depends on the household income as the aid coverage increases as income decreases, meaning that low-income households can get up to 90% of the amount of the estimated work. After the scheme was extended to all households, the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> income deciles represented 40% of applications in 2022, compared to 36 % for the 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> deciles.<sup>21</sup> The first four deciles comprise 43% of the energy savings, while 5<sup>th</sup>-8<sup>th</sup> deciles account for half of the savings. Therefore, the measure has not been effectively targeting the lowest income groups. However, as the measure was targeted to only low-income households in the time of its launch, it has been a conscious decision to broaden the scope also to other income groups and increase the budget.

The **Latvian** measure targeting multi-apartment buildings might not be very efficient in targeting lower-income households. First, the nature of financial instruments rather than grants does not make it preferable for households that do not have the financial basis to apply for a loan. Also, as the measure works on the principle of "first come first served", and stakeholders indicate that citizens are not very informed about its benefits and are rather sceptical towards it; the measure might not reach the apartment buildings with the most vulnerable habitants.

Though the **Bulgarian** investments do not address the energy poor directly, the Bulgarian grant funding amount to 100% of the renovation costs in the first round of calls. In the second round, this drops to 80%. However, one of the reforms aims at developing a definition and criteria for energy poverty and vulnerable consumers to be included in the Energy Act. The criteria will take into account low income, high-energy costs as a share of available income and low energy efficiency. The amendment may ensure a better consideration of vulnerable households, also regarding the renovation and other energy efficiency support. There will be subsidies available for vulnerable households to bridge the financial contribution, though these are not funded directly from the RRF. However, the

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<sup>20</sup> [Ministry of European Investments and Projects](#). Retrieved 21 Sept 2023.

<sup>21</sup> [Ministry of Ecological Transition and Territorial Cohesion of France](#). Retrieved 4 July 2023 and 29 August 2023.



reform is set to align with the Directive on the internal market for electricity<sup>22</sup> and does not go beyond the existing EU-level requirements.

Similarly to Bulgaria, the **Romanian** renovation wave fund can cover up to 100% of the renovation costs as a grant for the whole programme. Moreover, 180 million EUR is specifically earmarked for energy renovation projects in residential buildings dedicated to communities exposed to the risk of poverty and social exclusion.

#### 4. *Capacity to attract private financing and strengthening of financial market*

To fully support the renovation wave the uptake and development of private financing is also essential. Private financing can come from various sources, such as individual savings or borrowed from banks, or through innovative financing schemes such as on-bill financing. Additional private financing also provides incentives to assure the quality and cost-effectiveness of renovation works.

The **Romanian** renovation wave fund can cover up to 100% of the renovation costs as a grant. The scheme requires substantial public funding and may create dependencies or high expectations on government support. Nevertheless, EUR 50 million of RRF funding is included in the measure to support the uptake of private financing through guarantees under the InvestEU facility. The scheme provides guarantees for investments in sustainable transport, energy efficiency and renewable energy projects in buildings. However, the effectiveness of this measure is still unclear, as the approval committee only recently assessed this measure positively. Although, no further reforms are included in the RRP to support the uptake of innovative private financing schemes, such as, a legal framework for ESCO financing or green mortgages.

The **Bulgarian** reform of the Energy Act aims to provide a legislative framework for on-bill financing, for example by energy service providers (ESCO). This will facilitate the uptake of innovative private financing to increase renovations. In addition, the ESCO financing can be used in combination with the 2<sup>nd</sup> call for building renovations, such that no immediate self-financing is required.

In **Latvia**, grant funding can be combined with a loan from a credit institution. The grant only covers maximum 49% and can be deducted from the full loan. The measure puts emphasis on developing the financial green loan market and reducing grant dependency. However, a Latvian stakeholder suggested that, while supporting the private financing is good, it comes at a risk that low-income households may not be able to apply for such loans due to low credit scores and not benefit from the grants. For business, a loan with a capital discount is offered through Altum, which helps attract private financing by firms.

The **French** RRP as well as the broader programme France Relance pays significant attention to green transition in general and energy efficiency of buildings particularly. In addition to RRF funding, a significant amount of national funding has been allocated to the measures, particularly in the popular MaPrimeRenov' programme. Due to the popularity of the scheme among households, the French government has made changes in the programme, e.g. increased the number of annual requests and the allocated annual budget by 66% from 2.4 billion to 4 billion in 2024. Regarding the private funding, the MaPrimeRenov' provides subsidies up to 90% of the renovation project costs, and the highest subsidy rate is for low-income households. Therefore, private funding is included in the projects supported by the scheme.

#### *D. What challenges have been encountered related to the measures? For example, what is the impact of external factors, such as rising material prices and lack of skilled labour?*

Some general factors are affecting the construction sector across the EU: particularly inflation and lack of skilled labour. The unexpected rise in construction cost due to rising material prices has a negative impact as higher prices can lead to the down-scale of quantitative targets, as the same budget covers fewer renovations. The construction costs rise quickly starting in the end of 2020, mainly driven by the cost of input materials. In 2021, the prices increased further 5.6% on average across the EU. The developments accelerated in 2022, and the

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<sup>22</sup> DIRECTIVE (EU) 2019/944 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU.

majority of EU MSs faced price increases of more than 10%, with an average increase of 11.9% EU-wide<sup>23</sup>. Prices have so far in 2023 recovered slightly, as the costs of production materials has decreased.

In addition, the lack of skilled labour is a longstanding challenge in the construction sector. To achieve the targets of the Green Deal, more skilled labour in the construction and renewable energy sector is needed to implement renovation works. This is a significant issue particularly in Central Eastern European countries as the workforce is emigrating towards Western Europe where there is sufficient work and higher wages. Finally, the unforeseen inflation has also increased interest rates substantially over the last two years. This has a negative effect on the private co-financing of renovations by households. In contrast, energy prices have also risen, which has a positive impact on the incentives to improve energy efficiency to reduce energy bills.

In addition to EU-wide challenges, identified country-specific challenges are presented in the Table 5.

Table 5 Country-specific implementation challenges

Country	
FR	<ul style="list-style-type: none"> <li>• <b>Technical challenges</b> with the MaPrimeRenov' programme: malfunctions in the MPR portal have led to nearly 500 complaints during the first two years.</li> <li>• The <b>waiting periods</b> for MaPrimeRenov' have been relatively long .</li> <li>• <b>Insufficient aid coverage</b> due to the recent inflation, increasing the costs for households.</li> <li>• <b>Mitigation measures:</b> Anah, the responsible public agency, has established a team dedicated to resolving the most complex cases, continuous technical improvements of the platform, and ongoing development of a partnership with France Services, which will help households who so wish to formalise and monitor their request for assistance, and direct them effectively to France Rénov' (the public agency for renovations). As of February 2023, the maximum aid per household has been increased by 5,000 euros to cover additional costs.</li> </ul>
BG	<ul style="list-style-type: none"> <li>• <b>Political instability</b> is one of the key obstacles to the timely implementation of the reforms.</li> <li>• <b>Lack of interest in co-financing</b> and undeveloped financial instruments (e.g. ESCO model).</li> <li>• <b>The low solvency of owners</b> in multi-apartment buildings, especially regarding the aim to increase self-financing. The reforms to support energy poor specifically and targeted subsidies for this group have been delayed.</li> </ul>
LV	<ul style="list-style-type: none"> <li>• <b>Lack of interest in co-financing.</b> In Latvia, the RRP measures require financing also from the households. These households have had more difficulties than expected in finding suitable financial products.</li> <li>• <b>Undeveloped financial markets</b> for financing renovations.</li> <li>• The <b>popularity of the measures</b> among the general public in Latvia. A stakeholder sees that the measures are not highly trusted among citizens and that there's some scepticism towards them. The stakeholder considers municipalities as generally more trustworthy than the government among the citizens and therefore emphasizes the importance of including municipalities in the implementation of the measures. However, another stakeholder indicated that one of the success factors of measures is an increasing legitimisation and general acceptance from the public.</li> </ul>
RO	<ul style="list-style-type: none"> <li>• <b>Lack of data</b> on buildings and energy use. A comprehensive overview of the buildings stock and its energy use challenges effective targeting and decision making of the funds available.</li> <li>• <b>Lack of knowledge</b> on energy efficiency and energy savings both among the general public and in regional governments.</li> <li>• <b>Financial challenges:</b> low disposable income of home owners and low solvency of owners' associations, leading to dependency on public grants.</li> </ul>

<sup>23</sup> EUROSTAT (2023). Construction producer prices or costs, new residential buildings - quarterly data (STS\_COPL\_Q)

### 1.3.1 Coherence

#### Summary

The extent of alignment between RRP measures and National Energy and Climate Plans (NECPs) and LTRS varies by country. Overall, RRP measures and reforms reflect the principles of the Renovation Wave and national long-term renovation strategies.

Many of the RRP measures are **integrated into existing policies and programs**, promoting coherence. Some countries had pre-existing programs that necessitated rapid RRP implementation, as seen in France, Latvia and Bulgaria.

RRP measures are **in line with REPowerEU's objectives**, focusing on energy reduction and renewables promotion. However, the evaluation of coherence with REPowerEU plans is pending for Latvia, Bulgaria and Romania; only France has published their REPowerEU chapter.

The RRP measures undergo assessment based on the 'do no significant harm' principle. Emphasis is placed on recycling construction debris. Concerns are raised about potential fossil fuel lock-in, but stricter rules have reduced these concerns.

#### E. *To what extent were the proposed RRP measures guided by the EU's priorities enshrined in the Renovation Wave and coherent with the national long-term renovation strategies?*

The RRP measures and reforms are strongly guided by the principles of the Renovation Wave<sup>24</sup> as highlighted by Table 7 below. The measures most strongly build on the principles of energy efficiency first and affordability. Affordability in renovations is described as making energy-performing and sustainable buildings widely available, in particular for middle and low income households and vulnerable people and areas. The measures include to a lesser extent inclusion of decarbonisation and integration of renewables, even though these aspects still exist together. However, note that measures targeted only at renewable energy are not included in this case study. Finally, healthy living, the twin transition and aesthetics are considered in specific measures or countries, but are not central to most schemes.

As indicated in the Table 6, the Romanian RRP is aligned with the Renovation Wave principles. In particular, the Renovation wave fund is well in line with the principles. It addresses particularly energy efficiency and affordability. Also, the reform on simplified and updated regulatory framework in the Romanian RRP aims, among others, to develop a methodology for the non-invasive approach to energy efficiency in buildings with historical and architectural value. The other case study countries mainly address energy efficiency and affordability.

Table 6 Comparison of Renovation wave principles and the NRRPs

Renovation Wave principles	FR	LV	BG	RO
Energy efficiency first	✓	✓	✓	✓
Affordability	✓	(✓)	✓	✓
Decarbonisation and integration of renewables	(✓)	✓	(✓)	✓
Life-cycle thinking and circularity	-	-	-	✓

<sup>24</sup> European Commission (2020), A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives.

High health and environmental standards	✓	(✓)	✓	✓
Tackling the twin challenges of the green and digital transitions together	-	-	-	-
Respect for aesthetics and architectural quality	-	-	-	✓

Source: Authors' assessment based on the NRRPs. Brackets (✓) refer to the principle being covered to a lesser extent.

The LTRs from 2020 have been fundamental documents on which measures and reforms were based in the case study countries. In Latvia and Romania, the National Energy and Climate Plans (NECP) and LTRs are explicitly mentioned. It is important to note that no EU funding was attached to the LTRs. Therefore, the LTRs also contain suggested investments that have not been implemented earlier. The RRF provided a key opportunity to put into effect these investments and schemes.

#### F. *To what extent have synergies between the RRP measures on energy efficiency in buildings and other EU and national programmes been identified and exploited?*

The measures in the RRP are relatively embedded in other policies and programmes, which creates coherent policies. The RRP measures and investment work together with other national and EU level programmes at multiple (policy) levels.

First, different streams of funding can be combined on a programme or scheme level to increase the scope and size. For example, renovation schemes make use of a programme name that is familiar to the public, but the underlying funding may come from several different sources, either international, national or regional, as well as other (private) sources of funding. For example, in Latvia, the RRP measures are planned to work hand in hand with Operational Programmes 2021-2027. In particular, the RRP funding provides an essential bridge between the two cohesion policy periods. This helped to provide a consistent availability of funding. In total, the RRP will add 182 apartment building renovations to 370 already planned for funding via other EU funds, e.g. ERDF programmes.<sup>25</sup> In France, MaPrimeRénov' provides greater consistency and simplicity for financial support for energy efficiency after the expansion of the program, as it is now the main public aid for energy renovations.

In addition, some of the Romanian measures are closely connected to other EU funds. For example, the financial instruments for energy efficiency in the buildings sector includes an uncapped portfolio guarantee which is partially covered by InvestEU. The guarantee is provided by the European Bank for Reconstruction and Development (EBRD) to selected financial intermediaries financing eligible final beneficiaries based on predetermined criteria. The guarantee is to be complemented by services to final beneficiaries, financed from funds available in the InvestEU Facility for Romania. Expanding financial intermediation and risk-sharing financial instruments for energy efficiency are key priorities both in the EBRD Country Strategy for Romania 2020-2025, as well as in the latest EBRD strategies for the financial sector.<sup>26</sup>

Second, on the end-user or households level, different measures and reforms can be used together to strengthen the effectiveness. Most schemes for energy renovation, including MaPrimeRénov', can be combined with aid granted within the framework of Energy Savings Certificates (CEE) which mobilise private financing. The complementarity of these two aids makes it possible to accelerate the pace of future renovations. This is also the case in Bulgaria, where the grant funding can be combined with novel ESCO financing.

#### G. *To what extent are the RRP measures on energy efficiency in buildings coherent with the REPowerEU plan?*

The REPowerEU plan includes three pillars: saving energy, producing clean energy and diversifying the energy supply. The RRP measures in the case study countries on energy efficiency greatly help with the reduction of energy use, though in the short term, the actual energy savings might be small. In addition, several measures also

<sup>25</sup> European Commission (2020), A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives.

<sup>26</sup> Ibid.

target the production of renewable energies, such as through solar panel placement. In addition to the initial RRP, the REPowerEU plan also provided an opportunity to submit an additional chapter dedicated to the REPowerEU.

For example in Latvia, the investments supporting renovations of municipal and private buildings include support for the purchase and installation of heat-producing sources using renewable energy technologies, as well as the wider use of renewable energy sources. This support is also available for business. The combination of energy efficiency targets and promotion of renewable energy sources in these measures contribute to the REPowerEU's objectives of substituting fossil fuels and accelerating Europe's clean energy transition, as well as the energy saving objective. CEE Bankwatch has recommended that Latvia put additional measures and support in the residential building renovation sector, such as a standardised approach to improving energy efficiency, municipal capacity-building programmes, and administrative changes for renovation incentives.<sup>27</sup>

France has submitted their REPowerEU chapter which recognises energy renovation as one of the main actions in terms of national energy independence. In the chapter, France has requested additional funding for renovating private and public buildings; EUR 1.6 billion for MaPrimeRénov' and EUR 0.1 billion for renovations of public buildings. For renovations of private buildings in particular, this means a significant increase in funding, as the total amount would more than double.

The Romanian RRP measures are coherent with the REPowerEU objectives. Romania submitted their REPowerEU chapter to the Commission in September 2023, with an additional non-reimbursable financial support of EUR 1.4 billion. The REPowerEU chapter is currently under negotiation with the Commission. One of the main objectives of the additional chapter is to increase energy efficiency in residential, public and industrial buildings and to accelerate renewable energy production in residential housing through solar panel and related energy storage systems. To support the uptake energy efficiency renovations in buildings, the creation of one stop shops is promoted. These one stop shops can provide information and assistance to citizens, in particular to vulnerable households.<sup>28</sup>

#### H. *To what extent the measures are coherent with the 'do no significant harm' principle?*

Member States were required to assess the measures in the NRRPs along the 'do no significant harm' principle and the assessments were approved by the Commission. Nevertheless, some criticism has been indicated by environmental groups on the quality of Member States' assessments, time pressure and lack of guidance from the Commission and lack of continuous monitoring of the climate and environmental impacts<sup>29</sup>.

In general, energy efficiency measures have a positive impact on the climate change mitigation dimension, as they contribute to the climate objectives by decreasing energy consumption and hence reducing emissions. Also, climate change adaptation is often well covered by the measures, as, for example, better insulation of buildings supports adapting to the climate change, as mentioned in the French DNSH assessment. However, circular economy, pollution and biodiversity impacts of the relevant measures often require a more in-depth assessment. In the following, we show a few examples on how significant harm on these aspects are assessed in the NRRPs.

- ▶ In order to comply with no significant harm on **circular economy**, renovation works in the Member States have to align with the EU Construction and Demolition Waste Management Protocol<sup>30</sup>. It requires all construction operators to ensure that a minimum of 70% of non-hazardous construction and demolition waste is prepared for re-use, recycling, and other material recovery, following the waste hierarchy. Operators must also minimize waste generation and facilitate re-use and high-quality recycling through selective material removal and available sorting systems.

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<sup>27</sup> [CEE Bankwatch](#) (May 2023).

<sup>28</sup> [Energy Industry Review](#) and [Ministry of European Investments and Projects](#). Retrieved 21 Sept 2023.

<sup>29</sup> Green 10 and Euronatur (2021). [Green10 statement on the 'Do No Significant Harm' principle](#).

<sup>30</sup> [EU Construction and Demolition Waste Protocol](#), 2018.

- ▶ When it comes to **pollution**, generally renovations decrease air pollution, e.g. by decreasing particles due to certain heating systems, however, construction works can also lead to an increase of temporarily dust and air pollution<sup>31</sup>.
- ▶ Many of the renovations are focused on urban areas, which are generally further away from protected biodiversity sensitive areas, such as Nature2000<sup>32</sup>. This is mentioned as an argument for less negative impact on **biodiversity**.

The case study countries do not always assess the potential environmental harms in a detailed way. Especially the three aspects above could be further assessed and the impacts of the measures should be well monitored in the future. For example, the DNSH assessment of the French MaPrimeRenov refers to obligatory environmental certificate (Reconnu Garant de l'Environnement, RGE) in case of water and marine resources, circular economy and biodiversity, without any further information on how well these aspects are covered in the certificate requirements. Latvian assessment mentions also the risk of increased use of woody biomass leading to increased pollution, and emphasizes the importance of minimising the negative impacts.

The RRF measures also face trade-offs between different policy goals. One such consideration is the balance between energy efficiency and natural gas use. A concern raised by stakeholders in Bulgaria and Romania is the fossil fuel lock-in by renovating buildings and installing gas boilers. Although these boilers may be more efficient than coal or wood-fired boilers, these boilers will continue to consume fossil fuels in the coming years. Yet, the instalment of gas boilers is not funded directly from the RRF measures. Due to REPowerEU and the energy crisis, there is additional pressure to reduce natural gas use to decrease the dependency on gas imports. Now other high-performing heating appliances are available, investments focusing exclusively on support for gas condensing boilers are in breach of Article 7(2) of the Energy Labelling framework Regulation. Thus, though exceptions may be possible for coal and oil-based systems, gas-to-gas replacement should not be supported.

Another trade-off is faced between the affordability and measures to support the uptake of private financing. While high amounts of grant funding in the investments in Bulgaria and Romania result in high affordability, the financial market cannot fully develop itself. In contrast, measures in France and Latvia require higher shares of private financing, but may be less accessible to lower income households without other targeted measures.

To ensure compliance with the DNSH principle, the importance of regular monitoring of impacts and potential harm of the measures has to be taken into consideration. The monitoring and assessments should be done by objective experts and Member States should be provided enough resources and guidance to follow up on the impact properly and in a harmonised way.

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<sup>31</sup> E.g. the French and Latvian assessments.

<sup>32</sup> E.g. French assessment.

## 1.3.2 EU added value

### Summary

Many of the RRP measures **build on existing programs**, and were allocated national funding or other EU funding. **The availability of RRF funding allowed these existing programs to substantially expand their capacity.** Without the RRF, these programs might have continued but at a much smaller scale.

In some cases, the RRF filled funding gaps for measures that were outlined but lacked financial resources.

The RRF prompted additional reforms and investment that were not previously planned or only outlined in the LTRS. Member States committed to enact these reforms timely due to their inclusion in the NRRPs.

#### *1. Would the measures have been implemented without the RRF? Are the measures based on existing measures?*

It is challenging to assess the RRP measures against a scenario where the RRF is not in place, due to lack of data and the stage of progress of the RRP measures. According to a previous study<sup>33</sup> comparing the energy-related measures in the NRRPs and the NECPs, the measures, across all Member States and categories, were expected to bring about specific improvements. However, the impact on certain areas is constrained, primarily due to some of the investments and reforms in the NRRPs overlapping with measures already included in the NECPs. Nonetheless, the RRF Regulation has introduced the option of RRF financing to ensure the implementation of measures that might otherwise have been delayed or halted due to the economic and budgetary implications of the COVID-19 crisis. Consequently, even though the additional ambition might be modest, comparing the current situation with a scenario without the RRF would likely lead to different outcomes.

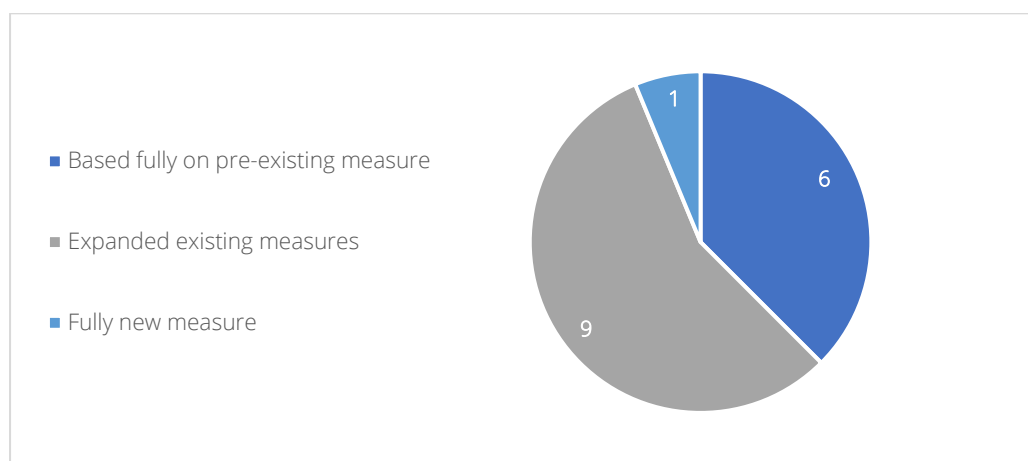
Overall, we find that the RRP measures targeting energy efficiency of buildings often build upon existing investment programs, funded either nationally or from other EU funds, but RRF funding allows them to expand their scope and funding significantly. Hence, the energy efficiency measures result in EU added value. Moreover, the inclusion of reforms in the NRRPs added pressure for Member States to conduct the needed legislative change quicker, as the RRF funding is dependent on the achievement of milestones and targets. However, the actual impact of these reforms is yet to be seen.

As shown in Figure 5, only one, Romanian Renovation wave fund, of the key measures covered in this study was a fully new measure. Others were either based on fully or partially on pre-existing measures. Considering the short timeline set for the planning of the RRP, this may have been the most efficient way of including well-functioning investments in the plans.

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<sup>33</sup> Ecorys, Ramboll, VIS (2022), Study providing analytical support for the financial instruments and programmes to facilitate investment in the energy sector: the Recovery and Resilience Facility.

Figure 5 Additionality of the key measures



Source: Ecorys assessment of the key measures.

As the French RRP is part of a broader national programme France Relance, launched in September 2020, the relevant measures, including MaPrimeRenov', existed already in that programme and were allocated national funding. The French RRF funding accounts for approximately 40% of the total funding of EUR 100 billion of France Relance. Also, the reform RE2020 was already enforced in January 2021, prior to the endorsement of the French RRP in June 2021.

Similar programs supporting renovations already existed in Latvia, and were funded by EU structural funds. For example, ALTUM, the Latvian development bank, has different financing tools targeted for renovations. The financial instrument for the renovations of multi-apartment buildings as well as support for public and municipal buildings existed already under EU structural funds period 2014-2020.

In Bulgaria, the RRP investment measure 'Support for the renovation of building stock' is based on the previously existing programme 'National Energy Efficiency Plan for Multi-family Residential Buildings'. A key consideration in preparation of the RRP measure was to reduce the grant dependency. Although the programs operate in a similar way, it was decided to create a new scheme and discontinue the old programme. The new support measure also contains calls for public and non-residential buildings.

In the Romanian LTRS, several measures were already outlined that could support the uptake of renovations. These included suggestions for regulatory reforms. In addition, the creation of a 'Renovation wave fund' was proposed, including an overview of different governance structures. Due to limited funding possibilities however, no definitive decisions were taken yet. The RRF provided the essential funding required to set up the fund. Due to the new structure, the Renovation Wave fund is considered a new measure. The available funding through the RRF provided a substantial contribution to the public investment required to reach the LTRS goals.

Regarding the reforms, many of them were mentioned in previous programmes and strategies, such as in the LTRSs, but not planned in detail. According to a stakeholder, the inclusion of reforms in the NRRPs created additional pressure and political commitment for Member States to enact legislation quickly, as these are tied to payments.

J. *How are the measures contributing to going beyond the national and EU targets for energy efficiency and renovation?*

Assessing the impact of the RRP measures on reaching energy efficiency and renovation targets is difficult for several reasons. The RRP differ significantly from previously drafted strategies and plans, such as the NECPs and LTRSs, in terms of structure and level of detail. Moreover, the RRF objectives and priorities of the economic



recovery rather than specific decarbonisation or energy targets. Hence, no harmonised methodology was provided for the assessment of the impacts on energy savings, renovation targets, or GHG emissions in the time of developing the plans. This means that only some of the covered measures include quantitative energy saving, emission reduction or renovation targets.

A study assessing energy-related RRP measures<sup>34</sup>, found that not many NRRPs had a likelihood going beyond the NECP targets. The table below provides an overview of the assessment of the case study countries.

Table 7 Likelihood of RRP measures contributing to going beyond the LTRS and NECP targets

MS	Likelihood of going beyond the LTRS or NECP targets
France	Medium
Latvia	Low
Bulgaria	Low
Romania	Low

Source: Ecorys assessment and Ecorys, Ramboll and VIS (2022).

While the RRP investments were often based on pre-existing plans, the RRF allowed for a larger scope and provided more funding than initially was available. However, the measures targeting energy efficiency in buildings in the four NRRPs do not indicate that they would contribute to going beyond the energy efficiency and renovation targets. Several stakeholders suggested that the milestones and targets have been set less ambitiously to ensure their achievement and secure the linked RRF payments.

### 1.3.3 Relevance

#### Summary

The RRP measures on energy efficiency in buildings are expected to **remain highly relevant and feasible until 2026 and beyond**. The ambitious EU targets up to 2050 necessitate a fundamental shift in Member States' energy systems, making continued investment in energy efficiency imperative. Latvian stakeholders, considering their northern climate and old building stock, foresee the relevance of these measures. Similar sentiments exist in France and Romania, where the popularity of renovation programs suggests continued relevance. However, in Bulgaria, while the initial wave of calls was successful, the reduction in grant funding may impact demand, necessitating ongoing support through one-stop shops and additional funding.

These RRP measures align with the needs identified in Long-Run Renovation Strategies (LTRS) of Member States, targeting common barriers like financial, technical, informational, workforce, awareness, and institutional constraints. Specific to Bulgaria, measures explicitly address these challenges, including grant funding, regulatory reforms, and improved decision-making for homeowner associations. Romania provides substantial grant funding, albeit with a potential limitation on private financing, while addressing workforce shortages through training and certification.

*K. To what extent will the RRP measures on energy efficiency in buildings remain relevant and feasible to implement until 2026?*

<sup>34</sup> Ecorys, Ramboll, VIS (2022), Study providing analytical support for the financial instruments and programmes to facilitate investment in the energy sector: the Recovery and Resilience Facility.

The relevance of the measures will continue to be high, as the climate targets up to 2050 are ambitious and require a fundamental shift in the energy systems of Member States. Therefore, it remains essential to reduce the energy use of the building stock, as well as decarbonise the energy used. For example, the Latvian stakeholders stated that due to the northern location and the cold climate, as well as the old building stock, RRP measures on renovation and energy efficiency investments and reforms will remain relevant to implement in the foreseeable future (until and after 2026).

The investment measures have seen high demand for funding in all case study countries. In general, the investment schemes see high popularity among the public and are well received. Thus, it is expected that demand will remain high and that the planned and future renovations can be executed. However, especially in Bulgaria, the effect of the reduced grant funding should be carefully analysed. It could be that the demand will be substantially lower when homeowner associations are not able to provide the 20% project costs. Moreover, it might be that associations with lower incomes may have less access to renovation investments.

However, there are some threats identified to the relevance of the investments and reforms. First, due to large demand of funding, the funds may be exhausted. The discontinuity of funding may delay renovation works and reduce the effectiveness of the measures. Second, the recent inflation and increased costs of construction material pose a threat to the targets and funding made available. Due to increased costs, there is a risk of lower quality renovation or lower quantity of housing renovated. Third, the increased inflation also impacted interest rates, which directly increased the costs of renovations where private financing is required. The increased costs of renovations may reduce demand, as pay-back periods become longer. In addition, the measures should consider the future building requirements and the depth of renovations. The energy performance of buildings will become stricter in the future, therefore, moderate renovation works might not be sufficient to future-proof the renovated buildings.

*L. To what extent are the RRP measures on energy efficiency in buildings relevant considering the needs identified in the Member States?*

The measures in the RRP aim to overcome and address the needs identified in the Long-Run Renovation Strategies of the Member States. In addition to country-specific needs or characteristics, there are also common themes that relate to barriers in renovation policy. Moreover, these common barriers can have different attributes and traits depending on the country:

- Financial barriers
- Informational barriers
- Appropriate and trained workforce
- Institutional capacity

Table 8 Country-specific challenges identified in the LRTS

Country	Identified challenges
FR	<ul style="list-style-type: none"> <li>• Significant part of the French (residential) building stock is in the highest energy consumption categories.</li> <li>• A large number of households in <b>energy poverty</b> (11.6% of the population).</li> </ul>
BG	<ul style="list-style-type: none"> <li>• High <b>intensity of grant assistance</b> (100 %).</li> <li>• High number of multi-family buildings, low participation in decision-making.</li> <li>• <b>Lack of predictability</b> and <b>poor long-term planning</b> of renovation programs.</li> </ul>
LV	<ul style="list-style-type: none"> <li>• <b>Limited access to funding</b>, especially in the regions.</li> <li>• <b>Challenges in decision making in multifamily apartments</b> with regards to renovation works</li> </ul>

RO	<ul style="list-style-type: none"> <li>• <b>High commercial interest rates</b>, lack of guarantees or over-guaranteeing, small projects leading to high transaction and project development costs.</li> <li>• <b>Lack of adequate data on buildings</b> and energy use, limited capacity for monitoring implementation/contractors or insufficient monitoring tools</li> <li>• <b>Lack of knowledge</b> on the opportunities and benefits of <b>energy efficiency among the general public</b>.</li> </ul>
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Source: LTRSs.

The French LTRS emphasizes the importance of overcoming energy poverty and enabling energy efficient buildings for everyone. MaPrimeRenov' is targeted to all income groups, and the level of support depends on the income of the household. However, regarding the relevance in reaching vulnerable households, it seems to have been most popular among middle-income households. In addition, the French RRP includes measures targeted at social and public buildings, and therefore addresses the opportunity for potentially higher energy savings in public building stock.

Latvian RRP measures do contribute to the identified challenges and objectives, however, only to a limited extent due to the relatively low RRF funding targeted on energy efficiency of buildings.

The Bulgarian measures target these country-specific challenges explicitly. The main investment in renovations has 100% grant funding in the first round of calls but reduces this to 80% in the second round. At the same time, one of the reforms aim to improve the financial landscape by exploring the regulatory framework for on-bill financing. In addition, the reform of the Condominium Ownership Act will facilitate easier decision-making of homeowners associations in multi-family buildings, by allowing digital presence and changing the rules on non-attendance. Finally, the measure of one-stop shops is aimed at overcoming common informational barriers.

Similarly, Romanian measures also provide high grant funding of projects, up to 100% of the costs, which is justified by the widespread energy poverty in the country, as well as the underdeveloped financial market. However, Romania does not reduce this funding in later calls, which may prevent private financing from being developed. Yet, the measures do target the shortage of trained construction workers and engineers, by facilitating training on renovation works and certifying builders. This will also improve the quality of renovation works and could potentially lower the costs too.

### RRP funding and estimated LTRS investment needs

The LTRS provide an analysis of the public and private financing required to reach certain targets in different scenarios. In the four case study countries, the RRF funding provided a substantial part of the public money required, at least in the short run. In France, the EUR 8.3 billion from the RRF is a significant contribution to the identified investment needs, as the amount corresponds to 33-55% of the estimated investment needs in the LTRS for 2019-2032<sup>35</sup>. According to Bulgarian LTRS, there will be EUR 2.3 billion needed for investments in renovations by 2026. The RRF contributes up to EUR 1.3 billion to this goal, which is an extensive share of the public investments required. However, the distribution of RRF funding in Bulgaria is more targeted towards public buildings, rather than the residential sector. This implies that targets for public buildings could be reached, while the uptake of private renovations may not reach the LTRS targets by 2026. In the Romanian LTRS, it is estimated that EUR 12.8 billion of investments are needed by 2030 to implement the recommended scenario. The EUR 4.7 billion that is available through the RRP is a significant share of the public funds required. Latvia, however, attributed relatively little funds of the RRF to energy efficiency in buildings.

Still, the uptake of private financing remains of large significance to further support the Renovation wave. The selected countries also put in place reforms that facilitate private financing. These reforms may have a lasting impact on the renovation rate, but it is too soon to be able to see the effect on the financial market.

Table 9 LTRS investment needs and RRP funding

<sup>35</sup> The investment required is based on the summation of costs for the three different scenarios of buildings. The broad scope of the scenario's results in a wide estimate. The following scenario's are covered in the LTRS: 1) efficiency-enhancement renovation; 2) high-efficiency renovation and 3) high-efficiency renovation and run on renewable energy.

Country	Total Investment need(EUR billion)	RRF funding for EE (EUR billion) (up to 2026)
France	15-25 (2019-2032)	8.3
Latvia	4.6 (2030)	0.135
Bulgaria	2.3 (2030)	1.3
Romania	12.8 (2030)	4.7

*M. To what extent will the RRP measures on energy efficiency in buildings remain relevant considering new policies such as the proposed revision of the Energy Performance of Building Directive (EPBD)?*

In the (preliminary) recast of the EPBD, several regulatory changes are proposed which can impact the RRP measures. Moreover, there are already several measures in line with and supporting the EPBD Recast.

Already the current version of the EPBD promotes the concept of nearly zero-energy buildings (nZEBs), where the building's energy needs are largely met through renewable sources or energy generated on-site. The recast makes a step forward from this towards zero-emission buildings (ZEB), however, applying only to new buildings. Nevertheless, the introduction of the ZEB raises a question if that will eventually be the objective for all the buildings and renovations. That would potentially require an adjustment in the country-specific renovation targets.

Second, the Commission proposes to introduce Minimum Energy Performance Standards (MEPS). These performance standards should gradually phase out the worst-performing buildings in countries, focusing on renovating buildings with the potential for decarbonisation and energy poverty reduction. The Commission proposes that all residential buildings should have at least an EPC F by 2030. This implies that all G labelled buildings should be renovated within 7 years. However, the RRP measures do not explicitly target the worse-performing buildings per se. For most investments, primary energy savings of at least 30% are sufficient to receive funding. Thus, there will be a larger challenge in targeting the worst-performing buildings quickly. It must be noted that the European Council has proposed a different strategy to MEPS, which requires only the average ECP of the building stock to be 'D' by 2033. In such a case, the relevance of the measures will remain higher.

Finally, the EBDP recast will require national building renovation plans have more focus on energy poverty, one-stop shops and promoting financing mechanisms. Already, the RRP measures in the case study countries contain measures that support these goals. For example, strengthening the financial landscape by introducing ESCO financing possibilities in Romania. In addition, a Bulgarian investment measure contains a call specifically targeting households facing energy poverty. Thus, the RRP already contain a broad scope of reforms and investments that support the renovation wave and the principles of the EPBD, though more will be required by the Member States to increase the renovation rate further.

## 1.4 Conclusions

In summary, the RRP measures related to energy efficiency in buildings in France, Latvia, Bulgaria, and Romania are **generally effective, coherent with EU priorities and policies, provide EU added value through additional funding and broadened scope of measures, and remain relevant considering climate targets and needs** identified in Member States. However, they may face challenges related to fund exhaustion, inflation, lack of workforce and the evolving EPBD regulations.

In terms of **effectiveness and impact of the relevant measures**, France and Romania are making good progress toward their milestones and targets for energy efficiency in buildings. Latvia is somewhat behind, and Bulgaria is lagging due to political turmoil. There have been outputs achieved, but it is too early to identify many quantitative

results of the measures. The funding in France, Romania, and Bulgaria is considered ambitious and contributes significantly to the identified investment needs, while Latvia's funding falls short of its renovation needs. However, Latvia has allocated significant funding to similar measures under other EU structural funds. Common challenges in all countries include a lack of skilled workforce and rising material prices, which can impact implementation of the measures.

Regarding **coherence with other initiatives**, the RRP measures are guided by the principles of the Renovation Wave, emphasizing energy efficiency and affordability. Synergies with other EU and national programs are identified and exploited to increase the scope and scale of the renovation efforts. The measures align with the objectives of the REPowerEU plan, focusing on energy savings and renewable energy production. Also, France and Romania have requested additional funding from REPowerEU on energy efficiency of buildings.

The RRP measures often build upon existing investment programs, funded either nationally or from other EU funds, but RRF funding allows them to expand their scope and funding significantly. Hence, the energy efficiency measures result in **EU added value**. Moreover, the inclusion of reforms in the NRRPs constituted a political commitment to the reforms and their timely implementation.

The RRP measures **remain relevant** considering the ambitious targets, the need to reduce energy use in buildings, and decarbonise the energy supply. Demand for funding remains high in all countries, and renovation measures are well-received by the public. Threats to the relevance of the measures include fund exhaustion, inflation, increased construction material costs, and the need for future-proofing renovations. The proposed revision of the Energy Performance of Building Directive (EPBD) may impact the relevance of RRP measures, especially regarding harmonisation of Energy Performance Certificates, Minimum Energy Performance Standards, and national renovation plans.

# Annex 1. Country Analysis

The following section provides, for each country, an overview of the measures targeted at energy efficiency of buildings, as well as a focused assessment of selected measures.

## 1.4.0 France

### Background

- The building sector accounts for **45% of the national energy consumption** and **25% of GHG emissions**.
- The French housing stock includes around **33.9 million residential buildings** and **6.1 million tertiary buildings**.
- 190 000 dwellings have been renovated to low-energy building standard over 10 years (98% of which are apartments), and such renovations have steadily increased since 2013. In 2018, more than 30 000 dwellings were renovated to low-energy building standards. In the tertiary sector, a total surface area of 3.7 million m<sup>2</sup>, have been renovated to low-energy building standard.
- Based on floor area, only 1% of renovations in residential sector were of medium depth and 0.2% deep renovations in 2012-2016.
- Of all the apartments in France, only 4.9% are in energy classes A or B, 23.5% in C, 32.4% in D, 22.4% in E and 17.3% very energy consuming, incl. classes F and G.

### Main targets of the Long-Term Renovation Strategy

- Carbon neutrality for building sector by 2050.
- Estimated investment need for 2019-2032: **EUR 15-25 billion**.
- **49% reduction of GHG emission of the building sector** by 2030 (compared with 2015).
- Tertiary buildings: Energy consumption reduction of 40% by 2030, 50% by 2040 and 60% by 2050.
- Residential buildings: Energy consumption reduction of 22% by 2030, 29% by 2040 and 42% by 2050.

Sources: European Commission (2022), Analysis of the national long-term renovation strategies; The Recovery and Resilience Plan of France; [Ministry of Ecological Transition and Territorial Cohesion of France \(2023\)](#); European Commission (2020), Comprehensive study of building energy renovation activities and the uptake of nearly zero-energy buildings in the EU.

### Energy efficiency of buildings in the French RRP

The first component, Energy renovations, of the French RRP focuses on financing a large-scale renovation programme to increase the energy efficiency of buildings, which is estimated to lead to several benefits:

- ▶ **Energy efficiency:** The plan aims to reduce energy consumption in buildings by promoting renovations that enhance insulation, use renewable energy sources, and adopt energy-efficient technologies. This move is expected to decrease greenhouse gas emissions and contribute to France's climate goals.
- ▶ **Job creation:** Energy renovations in the building sector require significant manpower, creating employment opportunities in construction, engineering, and related industries. The plan thus aims to boost employment and stimulate economic growth in these sectors.

- ▶ Social impact: The focus on renovating existing buildings could lead to improved living conditions for residents, particularly in low-income communities. Energy-efficient renovations can reduce energy bills for households, making homes more comfortable and affordable.
- ▶ Sustainable development: By investing in energy renovations, France seeks to transition towards a more sustainable and environmentally friendly economy, aligning with the principles of the European Green Deal.

The component includes four investments and one reform directly related to energy efficiency in buildings. The allocated budget for the key measures is in total **EUR 8.3 billion from the RRF** (excl. additional funding after the approval of REPowerEU chapter), corresponding to **33-55% of the estimated investment needs in the LTRS** for 2019-2032. Table 12 in Annex 1 lists these measures, their descriptions, allocated RRF funding and progress in terms of milestones and targets. In addition, energy renovation is addressed in several sub-measures across other components, such as 'Digitalisation of State, territories, enterprises, culture' and 'Research, Health and Dependence, Territorial cohesion', shown in Annex 1.

Key measures in the French RRP:

- ▶ I: Energy renovation of private housing, including energy sieves (MaPrimeRénov);
- ▶ I: Energy renovation and major rehabilitation of social housing;
- ▶ I: Energy (Thermal) renovations of public buildings; and
- ▶ R: Revised thermal regulation (RE2020).

In this context, it is important to note that the French RRP is part of the broader French national program France Relance and as such, several of the measures included in the RRF are co-financed through national funds. For example, the renovation programme MaPrimeRenov' was launched in France Relance, before the launch of the RRP, and has been budgeted national funding for at least 2020-2024, while it has also RRF funding for 2021-2022. Moreover, the Commission approved France's REPowerEU chapter in June 2023, including additional EUR 1.7 billion funding on energy efficiency of buildings<sup>36</sup>.

The implementation of the French energy renovation measures is on track: several targets related to all three investments under the first component have already been fulfilled or completed.

## Specific measures in focus

In the following, we analyse two of the investments further, Energy renovation of private housing (MaPrimeRenov) and Energy (Thermal) renovations of public buildings.

### Investment: Energy renovation of private housing (MaPrimeRénov)

The objective of the investment is to finance a grant scheme, called 'MaPrimeRénov' (MPR), which is allocated to owners to contribute to financing insulation, heating, ventilation or energy audit works for single-family houses or apartments in collective housing. A total of EUR 1.4 billion of initial RRF funding, and additional EUR 1.6 billion in the REPowerEU chapter, is allocated in the measure. In total, the programme has a budget of EUR 8.5 billion between 2020 and 2024.<sup>37</sup> MPR is part of the broader France Relance programme and it existed already before

<sup>36</sup> EUR 100 million on energy renovations of public buildings and EUR 1.6 billion on energy renovations of private housing (MaPrimeRenov). See: [https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/frances-recovery-and-resilience-plan\\_en](https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/frances-recovery-and-resilience-plan_en)

<sup>37</sup> In 2023, budgeted national funding is EUR 2.5 billion. Total amount a total amount committed of more than 5.6 billion euros by 2023. The French government has announced of an increased budget of EUR 4 billion for 2024. See, e.g.: <https://www.batiactu.com/edito/elisabeth-borne-devoile-budget-2024-maprimerenov-66637.php> <https://www.ccomptes.fr/fr/publications/premiers-enseignements-du-deploiement-du-dispositif-maprimerenov> [https://www.lemonde.fr/argent/article/2023/01/19/maprimerenov-ce-qui-change-pour-les-menages-et-les-coproprietes\\_6158443\\_1657007.html](https://www.lemonde.fr/argent/article/2023/01/19/maprimerenov-ce-qui-change-pour-les-menages-et-les-coproprietes_6158443_1657007.html)

the launch of the French RRP, therefore the following results are not results of only an RRP measure but a broader measure. Due to the popularity of the scheme among households, the French government has made changes in the programme, e.g. increased the number of annual requests and the allocated annual budget by 66% from 2.4 billion to 4 billion in 2024.

The aid was initially targeted to only low-income households but was extended to cover all households in 2021. However, the amount of aid depends on the household income, meaning that low-income households can get up to 90% of the amount of the estimated work. In addition to household incomes, the obtained energy savings affect the level of aid. For example, renovations that aim to bring the buildings out of energy statuses F and G get an additional bonus, as well as renovations that will help buildings reach statuses A and B.

As for all of the energy efficiency measures, France is well on track with the official milestones and targets for the MaPrimeRenov' scheme. As of mid-2023, a total of EUR 11 billion of funding has been linked to all the granted projects under the scheme, for almost 900,000 dwellings. For the projects completed by the end of 2022, the total energy savings were 3.0 TWh. The renovations supported by the scheme mainly concern heating and domestic hot water: in 2022, they accounted for 82% of energy savings for 72% of actions (respectively 85% and 76% in 2021). Heat pumps alone represent 57-59% of total energy savings for only 21% of actions. The insulation of walls, roofs, attics and windows represents nearly a quarter of actions for 16% of energy savings in 2022.<sup>38</sup>

During the first year of the scheme, MPR was reserved for low-income and very low-income households, while middle-income households were able to benefit from the energy transition tax credit (CITE). In 2020, before the RRP, the first income decile was under-represented (7% of the grant applications), 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> deciles represented the majority with 56% and 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> deciles with 23% of all the applications. The scheme was extended to all households from 2021 which led to redistribution of the income groups: the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> income deciles represent only 40% of applications in 2022, compared to 36 % for the 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> deciles.<sup>39</sup>

Regarding the depth of renovations, the measure aims to achieve at least 30% of energy savings on average, as required for the 100% climate tag, referring to a medium-depth renovation level. In addition, beneficiaries can receive bonuses based on the energy savings obtained which may lead to more incentives for deeper renovations.

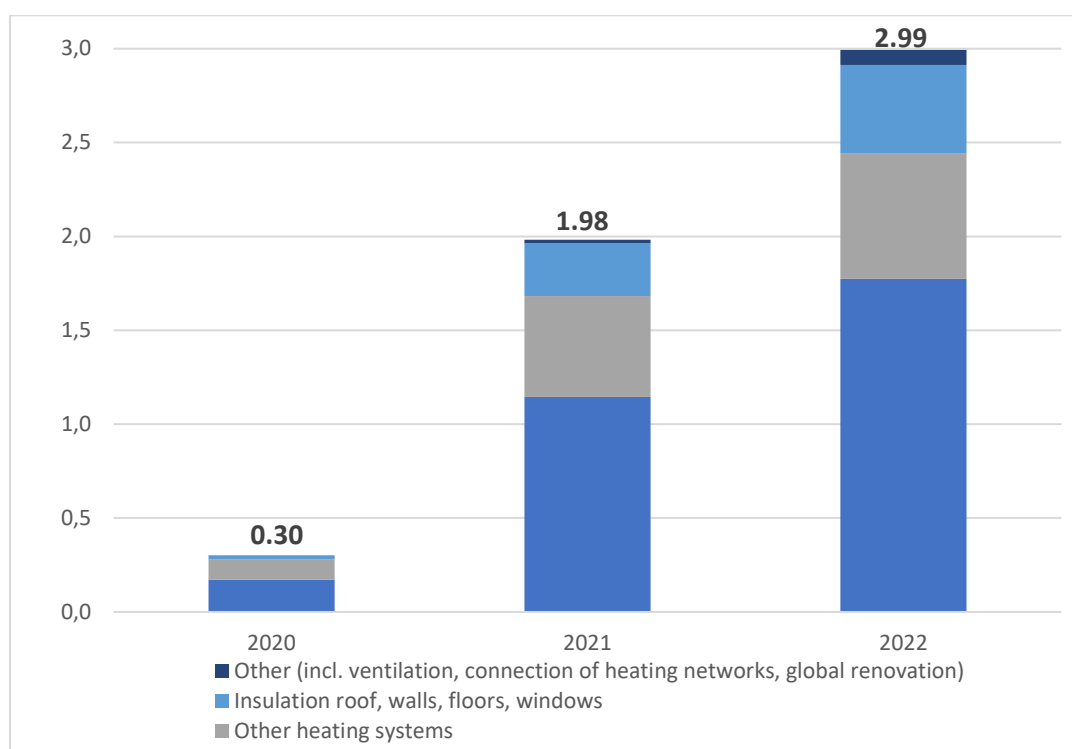
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<sup>38</sup> [Ministry of Ecological Transition and Territorial Cohesion of France](#). Retrieved 4 July 2023.

<sup>39</sup> [Ministry of Ecological Transition and Territorial Cohesion of France](#). Retrieved 4 July 2023.



Figure 6 Energy savings generated by MaPrimeRénov' by type of project in 2020-2022 (TWh/year)



Source: [Ministry of Ecological Transition and Territorial Cohesion of France](#).

Table 8 Annual number of granted projects and estimated energy savings related to the MPR

Year	Number of projects (1,000)	Savings (TWh/year)	Average saving per action (MWh/year)	Amount of MPR (EUR million)	Average amount of MPR (EUR)
2020	56.4	0.30	5.3	178.4	3,161
2021	395.0	1.98	5.0	1,019.0	2,591
2022	603.7	2.99	5.0	1,694.6	2,807

Source: [Ministry of Ecological Transition and Territorial Cohesion of France](#).

The scheme can provide better consistency and simplicity for financial support for energy efficiency as it is now the main public aid for energy renovations. MPR, like many other energy renovation schemes, can be combined with aid granted within the framework of Energy Savings Certificates (CEE) which mobilise private financing. The complementarity of these two aids can make it possible to accelerate the pace of future renovations.

However, stakeholders have identified a few obstacles since the launch of the programme. First, there have been malfunctions in the MPR portal which has led to nearly 500 complaints during the first two years<sup>40</sup>. The technical issues have had significant consequences on the payment of the aid. In addition, the waiting periods for the support have been relatively long and the aid coverage is considered insufficient in light of the recent inflation. Anah (French national agency of habitation) has replied to the obstacles by establishing a team dedicated to resolving the most complex cases, continuous technical improvements of the platform, and ongoing development of a partnership with France Services, which will help households who so wish to formalize and monitor their

<sup>40</sup> Defiscalisation.immo (2023), [MaPrimeRénov' : 1,6 milliard d'euros supplémentaires en 2024](#). Accessed 20 August 2023.

request for assistance, and direct them effectively to France Rénov' (the public agency for renovations)<sup>41</sup>. However, the issues represent only approximately 2% of the applications.

According to the NECP of France, the total investment needed to achieve the national targets is EUR 15-25 billion for buildings for 2019-2032. The RRF allocation of the MPR is 9.3%-5.6% of the total estimated need. Considering the additional national funding and assuming the programme is effective, the MPR as a whole significantly contributes to reaching the climate goals. The measure is also coherent with country-specific recommendations as it addresses CSR 2019.3 regarding energy renovations and CSR 2020.3 on clean and efficient energy consumption.

In terms of energy independence and REPowerEU, France considers energy renovations as one of the main actions and has requested EUR 1.6 billion of additional funding for MaPrimeRénov' in its REPowerEU chapter. This means that the total allocation for the measure would be more than twice as high as the RRF allocation in the original RRP.

Table 9 DNSH assessment of the measure

Measure	DNSH assessment
I: Energy renovation of private housing, including energy sieves (MaPrimeRénov')	<ul style="list-style-type: none"> <li data-bbox="568 819 1471 920">▶ <b>Climate change mitigation: positive impact.</b> The measure aims to reduce energy consumption and GHG emissions related to heating, cooling and domestic hot water. It is in line with 025bis with 100% climate share.</li> <li data-bbox="568 943 1471 1010">▶ <b>Climate change adoption: positive impact.</b> Better isolation of buildings supports adapting to changing climate.</li> <li data-bbox="568 1032 1471 1133">▶ <b>Water and marine resource: neutral impact.</b> Renovation sites eligible for aid must be certified in environmental issues (RGE)<sup>42</sup>, including professionals having attended relevant training.</li> <li data-bbox="568 1155 1471 1223">▶ <b>Circular economy: neutral impact.</b> Renovation sites eligible for aid must be certified in environmental issues (RGE).</li> <li data-bbox="568 1245 1471 1413">▶ <b>Pollution: neutral impact.</b> The measure will lead to a reduction in atmospheric pollution via the reduction of energy consumption and in emissions of fine particles linked to the heating of buildings (e.g. when replacing oil or coal-fired boilers). Regarding indoor air pollution, some insulation materials can be a source of indoor air pollution depending the material used.</li> <li data-bbox="568 1435 1471 1503">▶ <b>Biodiversity and ecosystems: neutral impact.</b> Renovation sites eligible for aid must be certified in environmental issues (RGE).</li> </ul>

### Investment: Energy (Thermal) renovations of public buildings

The investment targets state-owned buildings and its operators including local and regional authorities. It aims to reduce energy consumption of tertiary buildings by 40% by 2023 imposed as a requirement in the ELAN Law<sup>43</sup>. The allocated RRF funding is EUR 3.8 billion, and the estimated total cost is EUR 4 billion. The granted projects are selected based on their impact and potential for quick implementation, as well as the energy and environmental impact, with the objective to achieve at least 30% of energy savings on average. The LTRS already mentions a

<sup>41</sup> Anah (2023), [MaPrimeRénov' : les premières décisions de justice sont favorables à l'anah, qui continue d'améliorer ses dispositifs d'aide à la rénovation énergétique pour permettre aux ménages de réussir leurs travaux](#). Accessed 20 August 2023.

<sup>42</sup> For more information on the certificate, see: [CERTIBAT](#). However, it is not clear if the required training includes comprehensive training in the field of water resources, circular economy and biodiversity.

<sup>43</sup> Article 175 of the French ELAN Law.

planned investment of 1.8 EUR allocated for government building renovation for the period of 2017-2022, indicating that the RRP measure is based on an existing programme.

The measure is well on track and even coming to its end, as it has had an ambitious timeline. For all public buildings, the objective was to have all contracts notified by the end of 2021, and completed by the end of 2024. So far, two calls were launched for the state-owned buildings in autumn 2020; one targeting higher education and research buildings and universities, and one for all other buildings. A renovation contract has been notified for over 4000 public buildings and 265 buildings operated by local authorities which is in line with the set milestones for the measure.

The RRP states that the measure is in line with both the territorial Just transition plan as well as the NECP. Regarding the territorial aspect, the plan has a strong territorial impact, in particular in terms of locally created jobs due to the renovation projects. In terms of energy independence and REPowerEU, France considers energy renovations as one of the main actions and has requested EUR 0.1 billion of additional funding for energy renovations of public buildings in its REPowerEU chapter.

Based on the analysis of the RRP, the investment is coherent with the DNSH principle, as indicated in Table 10. It has a positive impact on climate change mitigation and adaptation and a neutral impact in regard to other DNSH aspects (see also Table 10). The positive impact on climate change mitigation is explained by the measure's aim to reduce energy consumption and GHG emissions related to heating, cooling and domestic hot water. Projects are selected based on a rating considering the energy performance, ecological and project maturity and therefore target significant energy renovation actions. The measure contributes to climate change adaptation by supporting better thermal insulation and therefore better adaptation to extreme temperatures. Project criterion also considers the improvement of the summer comfort of buildings. Regarding both climate change aspects, the measure is in line with the intervention field 026bis<sup>44</sup> with a 100% climate share.

Table 10 DNSH assessment of the measure

Measure	DNSH assessment
I: Energy (Thermal) renovations of public buildings	<p>The French RRP indicates that the investment supports climate change mitigation and adaptation positively. In addition, the RRP demonstrates that the impact is neutral regarding the other aspects, i.e. do not significantly harm the objectives.</p> <ul style="list-style-type: none"> <li>▶ <b>Climate change mitigation: positive impact.</b> The measure aims to reduce energy consumption and GHG emissions related to heating, cooling and domestic hot water. It is in line with 026bis with 100% climate share. Projects are selected based on a rating considering the energy performance, ecological transition and project maturity and therefore target significant energy renovation actions.</li> <li>▶ <b>Climate change adaption: positive impact.</b> Better thermal insulation of buildings facilitates adaptation to extreme temperatures. The project selection criteria take into account, e.g. the improvement of the 'summer comfort' of buildings.</li> <li>▶ <b>Water and marine resources: neutral impact.</b> The granted projects will not have a significant impact on water consumption, and if they do, it is due to better energy efficiency of buildings. The specifications of the call for projects favour clearly renovations instead of new constructions or reconstruction operations and therefore lead to a significant reduction in water consumption linked to the buildings. Considering the building's entire life cycle, and compared to other scenarios with the same GHG benefits, the impact is positive.</li> </ul>

<sup>44</sup> Green objective intervention code 025bis - Energy efficiency renovation of existing housing stock, demonstration projects and supporting measures compliant with energy efficiency criteria.

- ▶ **Circular economy: neutral impact.** National Anti-waste and circular economy regulations set certain criteria for the construction sector to ensure the circularity of the products. In addition, the project selection criteria include environmental performance criteria, such as the use of materials with a low environmental footprint, recycled or reused materials, and management and traceability of waste during the project.
- ▶ **Pollution: neutral impact.** The measure will lead to a reduction in atmospheric pollution via the reduction of energy consumption and in emissions of fine particles linked to the heating of buildings (e.g. when replacing oil or coal-fired boilers). Regarding indoor air pollution, some insulation materials can be a source of indoor air pollution depending on the material used.
- ▶ **Biodiversity and ecosystems: neutral impact.** The vast majority of renovation of public buildings takes place in already urbanised areas and will therefore not affect the natural habitats.

## 1.4.1 Latvia

### Background

- The building stock totals **1.18 million buildings**, of which 1.04 million are residential buildings.
- Majority of Latvian building stock is from the Soviet era: **70% of buildings are built between 1946 and 1990** meaning that the quality is low and renovations are needed to keep them in use.
- Most existing residential buildings have high energy consumption: average energy consumption for heating all types of buildings is 138-139 kWh/m<sup>2</sup> year.
- Based on renovated floor area, only 0.9% of residential sector renovations were medium depth and 0% deep renovations in 2012-2016, in non-residential sector the rates were 1.3% and 0.3% respective.
- The main source of funding of renovation in Latvia has been the European funds and until now it has mainly focused on improving energy efficiency in multi-apartment buildings.

### Main targets of the Long-Term Renovation Strategy

- Renovation of 30% of multi-apartment buildings (4,860) by 2030.
- Estimated investment needs for renovating the building stock by 2030 are following:
  - Multi-apartment buildings: EUR 4.52 billion
  - Private houses: EUR 4.62 billion
  - Non-residential buildings: EUR 4.89 billion
- Renovation of 500 000 m<sup>2</sup> of public buildings and reduction of thermal energy consumption from 140 kWh/m<sup>2</sup> to 120 kWh/m<sup>2</sup> by 2030.
- Climate neutrality of building sector by 2050.
- Annual energy savings in the buildings sector should be increased by a further 896 ktCO<sub>2</sub>e<sub>q</sub> to achieve overall savings of at least 80%, by 2050.
- The existing housing stock meets high standards of, e.g. energy efficiency and construction, the construction of all new buildings meets the requirements of zero-energy buildings, and the renovation and conversion of all buildings meets the requirements of zero or near zero-energy buildings by 2050.

Source: Latvian RRP; [Latvian Public Broadcasting](#) (2021); European Commission (2022), Analysis of the national long-term renovation strategies, Renovate2Recover (2021); European Commission (2020), Comprehensive study of building energy renovation activities and the uptake of nearly zero-energy buildings in the EU; EU DSO database (2017).

### Energy efficiency of buildings in the Latvian RRP

Latvian RRP includes total of four investments supporting energy efficiency in buildings, allocated **EUR 0.135 billion**, corresponding to **less than 1% of the investment needs** identified in the LTRS. Of our case study countries, Latvia represents the lowest amount of RRF funding targeted in energy efficiency, both in absolute in capita terms. Two of the measures focus on public buildings. The biggest RRF allocation is targeted to a measure aiming to improve the energy efficiency of multi-apartment buildings. The total **expected reduction in primary energy consumption of these measures is 23,423 MWh/year**. In addition, there are measures targeting energy efficiency in business and industry, however, these measures are not included in our analysis as it does not focus on

buildings. Three milestones with completion years by 2022 are related to the energy efficiency of buildings, and two of them have been completed<sup>45</sup>. Targets regarding energy savings tend to be focused more towards 2026.

Despite the low RRF allocation, Latvia has allocated substantial funding in energy efficiency in buildings during the past years, for example in the scope of EU structural funds.

Key relevant measures in the Latvian RRP:

- ▶ I: Improving the energy efficiency of multi-apartment buildings and transition to renewable energy technologies;
- ▶ I: Improving municipal buildings and infrastructure by promoting the transition to renewable energy technologies and improving energy efficiency; and
- ▶ I: Improving the energy efficiency of public sector buildings, including historical buildings.

## Specific measures in focus

### Improving the energy efficiency of multi-apartment buildings and transition to renewable energy technologies

The Latvian investment 'Improving the energy efficiency of multi-apartment buildings and transition to renewable energy technologies'<sup>46</sup> aims to improve the energy efficiency of multi-apartment buildings by providing loans and capital discounts to apartment and multi-apartment building owners. Another objective is to reduce energy bills for Latvian residents and increase the level of security of the energy supply. A Latvian state-owned financial institution, Altum, has the responsibility for implementing the scheme.

Regulation regarding the scheme was approved and entered into force in July 2022<sup>47</sup>, and therefore the first milestone related to the measure has been completed in time. The implementation of the programme started in December 2022.

The scheme covers up to 49% of the total eligible costs of the energy efficiency project. Financing for the implementation of the project can be obtained by applying for a bank loan, or if a bank loan is not possible, an Altum loan. The funding for the scheme will be enough to fund renovations in approximately 170 buildings. All the granted projects must achieve **at least 30% primary energy savings and annual primary energy savings of 1 MWh per EUR 5,000 of the attributable renovation costs**.<sup>48</sup> The minimum of 30% of energy savings and annual primary energy savings of 1MWh per EUR 5,000 which refers to medium-depth renovations rather than deep renovations.

As of the end of August 2023, there have been **39 applications**, equalling to same number of apartment buildings, in the scheme. Of these, a capital discount has been reserved for 8 apartment buildings. The amount of the reserved capital discount is EUR 2.77 million, equalling **a primary energy reduction of 5833.69 MWh per year**.

In regard to the measure's ability to reach different income groups, it might **not be very efficient in targeting lower-income households**. First, the nature of financial instruments rather than grants does not make it preferable for households that do not have the financial basis to apply for a loan. Also, as the measure works on the principle of first come, first served, and stakeholders have indicated to citizens not being very informed about its benefits

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<sup>45</sup> The following milestone, related to the measure aiming to improve the energy efficiency of public sector buildings, has not been completed yet: Entry into force of support programme for improving energy efficiency in national and historical buildings.

<sup>46</sup> RRP measure number 1.2.1.1.i.l., original measure name in Latvian: Daudzdzīvokļu māju energoefektivitātes uzlabošana un pāreja uz atjaunojamo energoresursu tehnoloģiju izmantošanu.

<sup>47</sup> Regulation '[Eiropas Savienības Atveseļošanas un noturības mehānisma plāna 1.2. reformu un investīciju virziena "Energoefektivitātes uzlabošana" 1.2.1.1.i. investīcijas "Daudzdzīvokļu māju energoefektivitātes uzlabošana un pāreja uz atjaunojamo energoresursu tehnoloģiju izmantošanu" īstenošanas noteikumi](#)', 2022.

<sup>48</sup> Altum, (n.d), [Daudzdzīvokļu māju energoefektivitāte 2022 -2026](#).

and being rather sceptical towards it, it might now reach the apartment buildings with most vulnerable habitants. However, it is good to note that the measure is targeted to housing associations instead of individual households.

The scheme contributes to the NECP target of renovations of 4,860 multi-apartment buildings, of which 370 were already planned to be renovated and funded by other EU funds while planning the RRP. However, **additional funding is still needed** in addition to the RRF and other EU funds in order to achieve the targets.

The measure is **in line with the DNSH principle**, as shown in Table 11. This is also supported by the Green Recovery Tracker<sup>49</sup>. The **climate impact of the scheme has been estimated as very positive**, i.e. it makes a significant, transformative contribution to climate change mitigation. However, the same report indicates that the **low amount or funding allocated in the measure might risk its aim to achieve its targets**. The funding of the scheme is sufficient for financing approximately 170 buildings which is a relatively low number compared to the LTRS target of 4,860 multi-apartment buildings (30%) being renovated by 2030.

Table 11 DNSH assessment of the measure

Measure	DNSH principle
I: Improving the energy efficiency of multi-apartment buildings and transition to renewable energy technologies	<ul style="list-style-type: none"> <li data-bbox="552 786 1398 920">▶ <b>Climate change mitigation: No need for in-depth assessment.</b> The measure supports green objective 025bis and aims to reduce GHG emissions, reduce energy consumption at least by 30% and facilitate the transition to renewable energy technologies.</li> <li data-bbox="552 943 1398 976">▶ <b>Climate change adaptation: No need for in-depth assessment.</b></li> <li data-bbox="552 999 1398 1133">▶ <b>Water and marine resources: No need for in-depth assessment.</b> The measure is not expected to have an impact on the environmental objective, or the expected impact is negligible in relation to the direct and primary indirect effects of the measure throughout its life cycle.</li> <li data-bbox="552 1155 1398 1648">▶ <b>Circular economy: In-depth assessment done.</b> Based on that, the measure will have a negligible impact on the circular economy aspect. The criteria for energy efficiency projects will include a requirement for energy efficiency works to be carried out by 70% of the producers of construction (non-hazardous) or disassembly waste in a building/site, waste must be delivered to recyclers of this type of waste, which will facilitate the re-use of waste in the economy, its recycling, the use of its products and the reduction of waste disposal as required by the EU waste legislation. At the national level, the tax on natural resources has been increased also on household, construction and the disposal of industrial waste, providing an additional incentive for the introduction of circular economy requirements. In addition, project applicants may be made subject to compliance with the principle of green public procurement when carrying out a procurement procedure for construction works.</li> <li data-bbox="552 1671 1398 1948">▶ <b>Pollution: In-depth assessment done.</b> In general, the measure is not expected to significantly increase pollution. However, a wider use of renewable energy such as biomass may have a negative impact. In recent years, the increased use of biomass in Latvia has led to an increase in emissions of fine particulates and organic compounds. To compensate for these negative impacts, additional measures should be taken and the use of other renewable energy sources should be promoted. In order to minimise the impact, actions involving the purchase, renovation or</li> </ul>

<sup>49</sup> Green Recovery Tracker Report: Latvia. Available at: <https://www.greenrecoverytracker.org/country-reports/latvia>

replacement of air quality improvement equipment will be supported in certain cases. When planning the measures, it will be necessary to comply with the national requirements on the limitation of air pollution from combustion plants. If necessary, the projects will plan the installation of air and flue gas treatment equipment, dust and other emission abatement equipment, which will be carried out at the same time as the reconstruction, purchase, renovation or replacement of thermal energy production equipment. BSO

- **Biodiversity and ecosystems: In-depth assessment done.** The expected impact of the measures on the protection of biodiversity and ecosystems is negligible given their direct or indirect effects over the life cycle. Investments in the energy efficiency of multi-apartment buildings are not foreseen in buildings located in the NATURA 2000 area or in specially protected nature areas. Energy efficiency improvement investments are intended for buildings that do not affect specially protected nature areas.

## 1.4.2 Bulgaria

### Background

- The Bulgarian housing stock consists of 1.37 million year-round occupied residential buildings, corresponding to 241 million m<sup>2</sup>. Combined with non-residential buildings, it makes a total of 346 million m<sup>2</sup> heated floor area. (LTRS)
- Share of the useful floor area of occupied residential buildings according to the year of construction: Before 1949, 9%; 1949-1969, 26%; 1970-1979, 22%, 1980-1989, 21%; 1990-1999 9%; 2000-2010, 10% ;After 2010 3% (LTRS)Before 1949, 9%; 1949-1969, 26%; 1970-1979, 22%, 1980-1989, 21%; 1990-1999 9%; 2000-2010, 10%; After 2010 3% (LTRS)
- Overview by energy performance and energy consumption based on residential buildings audited: C 1%; D 8%; E 39%; F 34%; G 18%; (LTRS)

### Main targets of the Long-Term Renovation Strategy

- **EUR 2.3 billion estimated investment needs for 2021-2030** are estimated, EUR 5.3 billion for 2031-2040 EUR 5.96 billion for 2041-2050.
- Three strategic objectives: harmonisation of legislation, sustainable financial mechanism and support for capacity building. The LTRS targets are conservative but realistic as the projections made in terms of energy savings are evidence based.
- 27.89% energy savings in the primary energy consumption and 31.69% energy savings in the final energy consumption by 2030 (compared to 2007).
- 45% of the total Bulgarian building stock (60% of the existing residential buildings and 17% of the non-residential buildings) will be renovated by 2050.
- Total of 3,274 ktCO<sub>2</sub> emissions savings by 2050.

Source: European Commission (2022), Analysis of the national long-term renovation strategies. Housing data are from the 2011 census.



## Energy efficiency of buildings in the Bulgarian RRP

The Bulgarian RRP aims to finance large-scale energy efficiency renovation through several investments and targeted reforms to facilitate investments in energy efficiency. The allocated RRF funding for the measures is **EUR 1.3 billion** corresponding to **56.5% of the investment needs estimated in the Long-Term Renovation Strategy for 2021-2030**. The key measures are presented in Annex 2.

Key Bulgarian RRP reforms and investments:

- ▶ I: Support for the renovation of building stock , including both residential and non-residential
- ▶ R: Boosting energy efficiency and renewable energy projects through the energy bills
- ▶ R: Facilitating and increasing the efficiency of investments in energy efficiency in multi-apartment residential buildings
- ▶ R: One-stop shop for renovations

The reforms aim to increase private investments in energy efficiency and to facilitate renovations with technical assistance by opening regional one-stop shops. The Condominium Ownership Management Act (as part of a reform 'Facilitating and increasing the efficiency of investments in energy efficiency in multi-apartment residential buildings') and the Energy Act will both be renewed to speed up renovation decision-making and to facilitate innovative financing methods. In addition, a definition of energy poverty will be included in the legislation.

The main investment measure aims to renovate both residential and non-residential buildings, including public buildings and buildings in manufacturing, trade and services, as well as tourism buildings. Overall, the scheme's objectives are to cover over 5 million m<sup>2</sup> and achieve a minimum of 30 % primary energy savings.

So far, the progress of the Bulgarian RRP has been behind schedule, as only one milestone has been reported as completed. Still, the reforms and investments are in progress. For the investment measure, all calls for proposals have been launched. As concerns reform, both the Condominium Ownership Management Act and the amendments to the Energy Act are currently under discussion in Parliament but have not yet been adopted.

Overall, the Bulgarian RRP covers several important aspects in strengthening the energy efficiency in buildings. The various initiatives work together to enable increased private investments, public financing and overcoming legislative barriers for renovations. However, the measures do not tackle the potential shortage of personnel required to implement the foreseen renovations.

## Specific measures in focus

### Support for the renovation of the building stock

The measure envisages the implementation of three components. The first component focuses on residential buildings, while the second and third components provide financing measures for the energy renovation of non-residential buildings, including public buildings and buildings in manufacturing, trade and services, as well as tourism buildings. The first component has a focus on multi-family apartment buildings, which face a multitude of challenges in setting up renovation works.

**3,068 project proposals** were submitted under the first sub-measure: "Support for sustainable energy renovation of the residential building stock - Stage I", totalling **EUR 2 billion of renovation works**<sup>50</sup>. This is substantially more than the EUR 608 million RRF funding available for the round. The second round of call opened recently.

The measure has a renovation target of more than 3.6 million m<sup>2</sup> building floor area, which is projected to reduce energy consumption by 405 GWh/y and the carbon footprint by 79 ktCO<sub>2</sub>/y. However, no data is available yet on

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<sup>50</sup> [Ministry of Regional Development and Public Works of Bulgaria \(2023\)](#)

the total floor area of the first round. Moreover, as renovation works have not started yet, the resulting energy savings cannot yet be assessed.

In the first round, the scheme provides a 100% grant of the project financing. For the second round, a maximum of 80% of the project cost will be granted, and 20% must be co-financed by the homeowner associations. It is possible to combine this to secure their financial share of the renovation activities through an energy-saving contract (ESCO) or other financial facility.

The large grant amount of the first round of the scheme, coupled with the poor state of the residential building stock, has resulted in high demand. It is uncertain whether this demand will remain as high in the second phase and whether the 20% financing of the project cost will pose a challenge to some homeowner associations.

One consideration of the investment in the residential sector is that ensuring geographical balance. A stakeholder explained this relates to the institutional capacity of some local or municipal governments and local homeowner associations to request financing. The risk of uneven spread has been considered during the stakeholder consultation process. This resulted in a limit on the funding per municipality (according to size).

The second and third component finance energy renovation of non-residential buildings. The second component of the investment scheme is targeted to public buildings and has EUR 193 million available. Eligible beneficiaries under the third component cover micro/small, medium and large enterprises throughout the country with a maximum of 50% grant funding of the project costs. The planned RRF funding is EUR 122 million and is supplemented by national and private co-financing.

### Boosting energy efficiency and renewable energy projects through the energy bills

In Bulgaria, the use of on-bill financing is largely uncommon. However, other countries show that substantial benefits can be gained through energy service providers. The amendment of the Energy Act aims to increase the renovations through on-bill financing, for example by ESCO (energy service providers). The reform will facilitate and provide a stronger legislative framework for on-bill financing. A working group has been set up to research and draft the mechanism and regulatory changes required. In 2023, an information campaign to end-consumers and traders in electricity will be launched to increase the uptake.

ESCO financing can be used for various types of renovation or energy efficiency projects from, for example, small investments in LED lighting, to deep renovations. As long as the investments can result in energy savings, both the energy service provider and the consumer can benefit. In addition, both residential and public buildings can make use of ESCO financing. Another advantage of ESCO financing is the concentration of technical knowledge, which decreases transaction costs and makes energy efficiency investment more attractive.

There is some concern that ESCO financing is mostly used for the highest paying cost-effectiveness savings investments, rather than the deeper renovations which may have higher upfront costs, but will reduce the energy needs substantially. However, the level of renovations can be specified in the contract beforehand.

The potential effects of ESCO and other on-bill financing measures can be substantial, but the market still needs to develop after the amendment of the Energy Act has been adopted. This may take time. The scheme is coherent with the Bulgarian aim to increase private investments in energy renovations through innovative funding.

## 1.4.3 Romania

### Background

- The Romanian building stock includes 5.3 million residential buildings and a total of 0.3 million public buildings.
- More than 63% of the residential buildings have less than 50 m<sup>2</sup> surface, which is much smaller compared to most EU countries.
- The vast majority of the population lives in home ownership (94.7%): around 90% of the residential apartments are occupied by owners.
- Homes are far below EU standards on minimum standards of comfort and hygiene: only 50.9 % of the population is connected to urban drainage and 67.5 % of the population has access to drinking water from public networks.

### Main targets of the Long-Term Renovation Strategy

- **9% reduction of final energy consumption in 2030** (0.83 Mtoe) and **cumulative 24% GHG emission reduction** (2.34 Mton) in 2021-2030.
- 65% reduction of final consumption in 2050 (6.14Mtoe) and 80% cumulative GHG emission reduction in 2021-2050.
- 77% of the total floor area of the building stock will be renovated or rebuilt by 2050.
- Investment need of **EUR 12.8 billion between 2020 and 2030**, to be provided from both private and public to reach renovation targets in the recommended scenario.
- In the recommended scenario, the annual renovation rates will increase gradually from the current 0.5% to 3.39% in 2021-2030, 3.79% in 2031-2040 and 4.33% in 2041-2050.
- The cost saving potential related to health is estimated to be EUR 1.480 million in the recommended scenario.

Source: European Commission (2022), Analysis of the national long-term renovation strategies; EU BSO factsheet

### Energy efficiency of buildings in the Romanian RRP

Energy-efficient building renovations and constructions make up 30% of the climate-tagged measures in the Romanian RRP, which shows the great focus put on it<sup>51</sup>. The RRP includes a broad Renovation Wave component, five investments and one reform related to energy efficiency in buildings. A list of relevant measures can be found in Annex 1.

Key Romanian RRP reforms and investments:

- ▶ I: Establishment of a renovation wave fund
- ▶ I: Financial instruments for the private sector – Energy efficiency investment in the residential and buildings sector
- ▶ I: Strengthening the professional capacity of professionals and workers in the renovation sector by developing training on energy efficiency construction
- ▶ R: Simplified and updated regulatory framework to support the implementation of investments in the transition to green and resilient buildings

The total allocated amount of RRF funding is **EUR 4.7 billion, 37% of LTRS investment needs up to 2030**.

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<sup>51</sup> European Commission (2023), [Thematic analysis: Energy efficiency in buildings](#).

The main investment establishes a Renovation Wave fund allocated more than EUR 2 billion to finance energy efficiency actions to renovate 4.3 million m<sup>2</sup> of multi-family apartment buildings and 2.3 million m<sup>2</sup> of public buildings. As Romania is one of the European countries most exposed to seismic risk, energy renovations will be partly carried out in parallel with seismic renovations to ensure a cost-efficient approach and a long-lasting effect of the investment. The investments 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. In addition, the RRP aims to increase the number of workers in the renovation sector. The LTRS estimates that the number of jobs in the building sector will need to increase from 14,782 in 2020 to 85,000 in 2030 to support the uptake of renovation works. The number of trained engineers needs to increase from 900 to 5,000 in ten years.

In addition, several other measures relate to the construction or renovation of energy-efficient buildings in sectors such as health, education and the judiciary. The RRF funding is also aimed at building energy-efficient public buildings, such as that meet the primary energy requirement target of at least 20% less than the requirement for near-zero energy buildings (nZEB). In addition, various investments are planned for renovating or building energy-efficient schools, day-care centres and universities. These measures which have a component of energy efficiency are listed in Annex 1.

## Specific measures in focus

### Establishment of a renovation wave fund to finance works to improve the existing building stock (Valul renovării)

The primary investment of the Romanian RRP with respect to energy efficiency in buildings is the establishment of the renovation wave fund. This renovation fund aims to renovate 2.3 million square metres of public buildings and 4.3 million square metres of residential multi-family buildings. The objective of the investment is to achieve a total CO<sub>2</sub> saving of at least 0.225 million tonnes and total primary energy savings of at least 0.17 Mtoe.

The fund will launch different calls for proposals to target moderate and deep renovations, as well as a specific call addressing communities at risk of poverty and social exclusion. In addition, the renovations, where needed, also include a component to improve seismic consolidation.

The calls have the following specified goals:

- Call 1: for integrated seismic and moderate renovations in residential buildings;
- Call 2: for energy renovation projects in residential buildings dedicated to communities exposed to the risk of poverty and social exclusion;
- Call 3: for energy renovation projects in residential buildings. In total, 90% is set for moderate renovations and 10% for deep renovations (of at least 60% energy savings);
- Call 4: for integrated seismic and energy efficiency projects in public buildings; and
- Call 5: energy renovation projects in public buildings, of which 80% moderate renovations and 20% deep renovations (of at least 60% energy savings).

The fund targets multi-family buildings and public buildings as these have the most difficult access to financing from other commercial institutions. The 100% grant funding of the scheme requires a large amount of public financial resources.

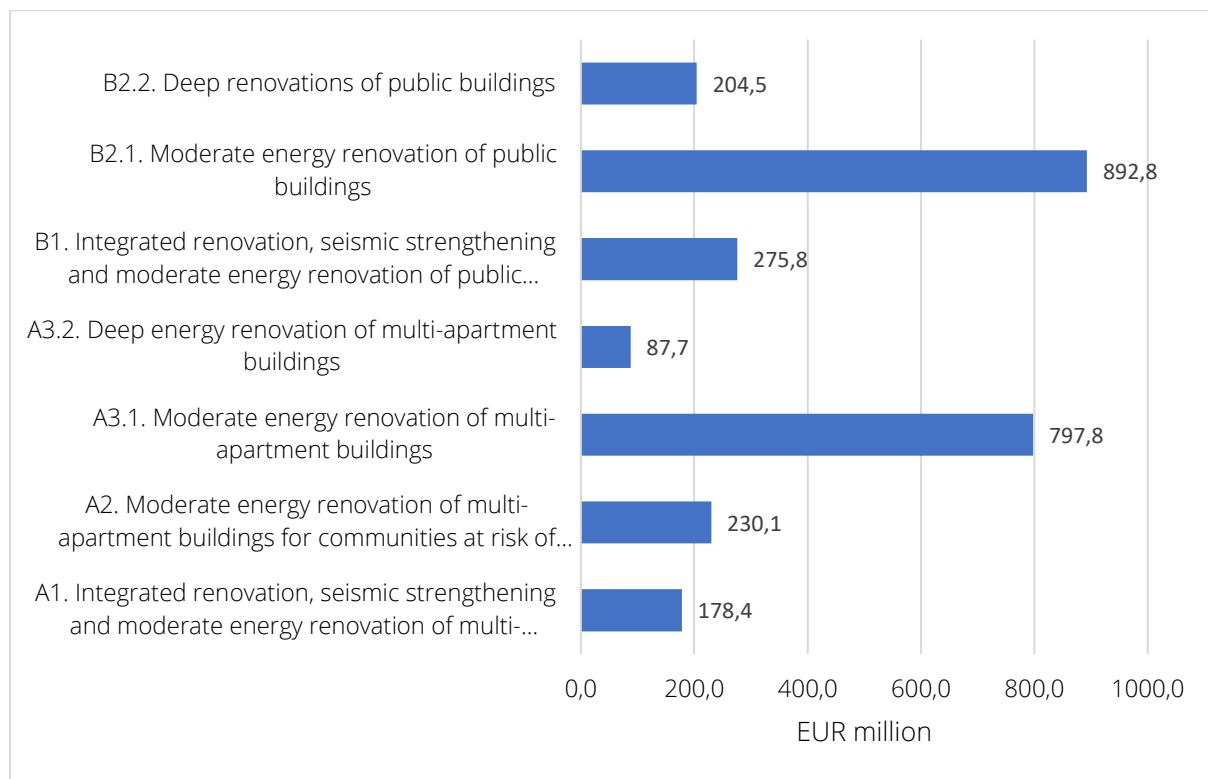
The first and second rounds of calls were launched in 2022 and the first contracts were signed at the beginning of 2023. The first round of calls resulted in 970 granted renovation projects, and the second round in 603 granted projects. The total financing value of these projects was EUR 2.67 billion<sup>52</sup>. Figure 7 shows the share of value per

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<sup>52</sup> [Ministry of Development, Public works and Administration](#) of Romania.

calls, indicating that moderate renovations of public (EUR 892.8 million) and residential buildings (EUR 797.8 million) account for highest values.

Figure 7 Granted funding per call, rounds 1 and 2



Source: [Ministry of Development, Public works and Administration](#).

In an example project, construction works have started in the first 20 of 158 buildings in the Bucharest area. The renovation works will cover both the thermal renovation of the exterior building envelope (insulation and instalment of double-glazed windows) and interior upgrading. In addition, solar panels will be installed to reduce the electivity bills<sup>53</sup>.

### Financial instruments for the private sector – Energy efficiency investment in the residential and buildings sector

The InvestEU facility will benefit from an additional EUR 50 million portfolio guarantee to support the uptake of private financing that support energy efficiency investments in the residential and building sector. The guarantee will be provided by the European Bank for Reconstruction and Development (EBRD) to selected financial intermediaries that finance final beneficiaries on appropriate projects. The scheme provides guarantees for investments in sustainable transport, energy efficiency and renewable energy projects in buildings. The projects must fulfil a set of sustainability requirements, as such, project breach the DHSN principle or that contribute to carbon emissions are excluded. Expanding financial intermediation and risk-sharing financial instruments for energy efficiency are key priorities both in the EBRD Country Strategy for Romania 2020-2025, as well as in the latest EBRD strategies for the financial sector.

<sup>53</sup> European Commission (2023). [Energy renovation of 158 multi-family buildings in Sector 4 Bucharest](#).

## Annex 2. Lists of measures

### Key measures per case study country

Below we present all the relevant measures, their allocated RRF funding, descriptions and related targets and milestones.

Table 12 Relevant measures in the French RRP

Name of the measure	RRF funding (EUR, bn)	Description	Quantitative targets (decrease in energy consumption or emissions)	Milestones and target (as of end of 2023)
I: Energy renovation and major rehabilitation of social housing	0.5	A grant scheme for low-cost housing organisations, semi-public companies, public administrative organisations, etc. to support energy renovations of social housing by using French solutions for high-performance energy renovations.	In 2012-2014 in Midi-Pyrenees, a similar renovation programme resulted in a 61% improvement in the performance of energy consumption of the targeted low-income housing.	T: 20,000 dwellings within the category of social housing receive a grant for renovation, to achieve at least 30% of energy savings on average. <b>Fulfilled.</b> T: Additional 20,000 dwellings within the category of social housing receiving a grant for renovation, with an objective of achieving at least 30% of energy savings on average. <b>Completed.</b>
I: Energy renovation of private housing (MaPrimeRénov)	3*	A grant scheme ('MaPrimeRenov') for building owners to improve insulation, heating, ventilation or energy audit works for single-family houses or apartments in collective housing	n/a	T: 400,000 households which have been granted an MPR. <b>Fulfilled.</b> T: Additional 300,000 households have been granted an MPR. <b>Completed.</b>
I: Energy (Thermal) renovations of public buildings	3.9*	Investments to support energy renovation in public buildings, notably higher education and research buildings and other state buildings or municipality buildings, with an objective to reduce energy bills, increase the comfortability of	The projected reduction of energy consumption is on average 37% per granted project.	T: 2,900 renovation projects of public sites belonging to the State, for which at least one renovation works contract has been notified, with an objective of achieving at least 30% of energy savings on average. <b>Fulfilled.</b>

		buildings and reduce the energy and environmental footprint.		T: 1,954 public buildings belonging to local and regional authorities (LRAs, including municipalities and grouping of municipalities) that have been the subject of a subsidy notification from the State or the Regional Council for energy renovation works, with an objective of achieving at least 30% of energy savings on average. <b>Completed.</b>
R: Revised thermal regulation RE2020	-	The reform aims to revise the thermal regulation "RE2020" in order to improve energy sobriety and the decarbonisation of the energy consumed, reduce the carbon impact of new buildings and ensure the adaptation of new buildings to climate change.	n/a	M: Entry into force of legislative changes included in the new RE2020 in order to reduce GHG emissions of new constructions, improve the energy performance of new buildings and adapt new buildings to climate change. <b>Completed.</b>

Source: FENIX, July 2023; French NRRP.

\* Includes additional REPowerEU allocation: EUR 1.6 billion for 'Energy renovation of private housing (MaPrimeRénov)' and EUR 100 million for 'Energy (Thermal) renovations of public buildings'.

Table 13 Relevant measures in the Latvian RRP

Name of the measure	RRF funding (EUR, bn)	Description	Quantitative targets (decrease in energy consumption or emissions)	Milestones and target (as of end of 2023)
I: Improving the energy efficiency of public sector buildings, including historical buildings	0.024	Direct support to institutions for the renovation of buildings owned without economic activity, such as buildings hosting activities related to the exercise of public authority (police, army, justice), buildings occupied by municipalities, local and regional authorities.	Reduction of primary energy consumption in public buildings: 3 875MWh/year	M: Entry into force of support programme for improving energy efficiency in national and historical buildings. <b>Not completed.</b>
I: Improving municipal buildings and infrastructure by promoting the transition to renewable energy technologies and improving energy efficiency	0.029	The measure aims to improve the energy efficiency of municipal buildings and infrastructure, incl. construction works, the purchase and installation of heat-producing sources using renewable energy	Reduction of primary energy consumption: 4544 MWh/year	M: Entry into force of the legal framework for a support programme to improve energy efficiency in municipal infrastructure, which supports projects with a planned reduction

		technologies, as well as the wider use of renewable energy sources, promoting their use in the building sector. The measure also aims to reduce the costs of maintenance of buildings.		of primary energy or CO2 by at least 30 %. <b>Completed.</b>
I: Improving the energy efficiency of multi-apartment buildings and transition to renewable energy technologies	0.057	A financial instrument that will provide both a loan (or guarantee) for the renovation of multi-apartment buildings, as well as a grant (capital discount). 15 % of public funding will come from Altum loans and another 15 % will be made up of Altum guarantees. Grants will cover 49 % of the renovation costs.	Reduction of primary energy in apartment buildings with improved energy efficiency: 14,423MWh/year	M: Entry into force of support programme for improving energy efficiency in residential buildings. <b>Completed.</b>
I: Increasing energy efficiency in business, which is planned to be implemented nationally in the form of a combined financial instrument <sup>54</sup>	0.120	A financial instrument available for business with a capital discount through Altum. The loan can be requested for 1) increase energy efficiency in non-residential buildings and production processes or 2) to implement renewable energy projects for self-consumption or 3) for purchasing of electric vehicles.	Reduction of 11,498 ton of Co2 equivalent in t/year:	M: Entry into force of Regulation approved by the Cabinet of Ministers supporting the implementation of programmes to improve energy efficiency of businesses. <b>Completed.</b>

Source: FENIX, July 2023; Latvian NRRP.

Table 14 Relevant measures in the Bulgarian RRP

Name of the measure	RRF funding (EUR, bn)	Description	Quantitative targets (decrease in energy consumption or emissions)	Milestones and target (as of end of 2023)
R: Facilitating and increasing the efficiency of investments in energy	-	Reform of Condominium Ownership Management Act to address barriers in energy	n/a	M: Entry into force of the amendments to the Condominium

<sup>54</sup> Within the measure, EUR 25 million is available for energy efficiency increases of business. Moreover, this money can also be used for energy efficient equipment and production processes. Therefore it was decided that the measure will not be discussed at length in the case study, as the primary focus is on energy efficiency in buildings.



efficiency in multi-apartment residential buildings		efficiency investments for residential buildings		Ownership Management Act. <b>Not completed.</b>
R: One-stop shop	-	The one-stop shop shall integrate all the necessary information and services needed for energy renovation, including the available EU sources of financial support.	n/a	M: Six physical pilot one-stop shops shall be operational on a regional basis to provide advice and reduce the administrative burden for both, households and businesses. <b>Not completed.</b> T: At least one physical one-stop-shop office in each NUTS-3 regions shall be operational. The one stop-shop shall integrate all the necessary information and services needed for energy renovation, including on the available EU sources of financial support. <b>On track</b> (Q4/2023).
R: Boosting energy efficiency and renewable energy projects through the energy bills	-	The reform aims to expand the possibilities for implementing measures and projects to increase energy efficiency and use of energy from renewable sources in the context of limited financial resources. Good practices will be explored and regulatory changes will be prepared.	n/a	M: Entry into force of the amendments to the Energy Act and secondary legislation to enable energy efficiency improvement and renewable energy projects under Energy Service Companies (ESCO) model. <b>Not completed.</b>
I: Support for the renovation of building stock	0.924	The measure envisages the implementation of three energy efficiency components. A mandatory requirement after implementation of the measures for all components is to achieve a primary energy savings of 30 % for each site. The first component focuses on residential buildings, while the second and third components provide financing measures for the energy renovation of non-residential buildings, including public buildings and buildings in	<b>Improved residential infrastructure</b> — total area sqm: 3,688,900 (2026); primary energy savings of 30 % for each site; Decrease in annual primary energy consumption: 405 GWh/y (2026) GHG emission reductions: 79 ktCO <sub>2</sub> /y (2026) <b>Improved public infrastructure</b> — total area sqm: 1,426,847; Improved commercial/ production/service infrastructure — total area sq.: 570,371; energy savings of 30 % for each site; Decrease in annual primary energy	M: Establishing a national support scheme for energy efficiency renovation for residential and non-residential buildings. <b>Completed</b> M: Call for proposals for the energy efficiency renovation for residential buildings. <b>Completed.</b> M: Calls for proposals for the energy efficiency renovation for non-residential buildings. <b>Completed.</b>

R: Development of definition and criteria for “energy poverty” for households in the Energy Act	-	<p>manufacturing, trade and services, as well as tourism buildings.</p> <p>Reform to address energy poverty and for the use of priority treatment of households for energy efficiency projects.</p>	<p>consumption: 379 GWh/y (2026); GHG emission reductions: 208 ktCO<sub>2</sub>/y (2026)</p> <p>n/a</p>	<p>M: The amendments to the Energy Act and the subsequent secondary legislation shall regulate the definition of “energy poverty” and define criteria for identifying households in energy poverty and vulnerable consumers. The amendments shall take into account the criteria listed in the Directive 2019/944: low income, high-energy costs as a share of available income and low energy efficiency. <b>Not Completed.</b></p>
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Source: FENIX, July 2023; Bulgarian RRP.

Table 15 Relevant measures in the Romanian RRP

Name of the measure	RRF funding (EUR, bn)	Description	Quantitative targets (decrease in energy consumption or emissions)	Milestones and target (as of end of 2023)
I: Establishment of a renovation wave fund to finance works to improve the existing building stock	2.17	The ‘Renovation wave’ fund is structured in the form of an investment programme managed by MDLPA. It includes two components: a grant scheme for energy efficiency and resilience in multi-family residential buildings and a similar grant scheme for public buildings.	<p>At least an average level of primary energy savings of 30%.</p> <p>First component: total primary energy savings of at least 0.15Mtoe. Second component: total primary energy savings of at least 0.0215Mtoe.</p>	<p>M: Call for proposals for the energy efficiency renovation and integrated renovation (seismic consolidation and energy efficiency) (public buildings). <b>Fulfilled.</b></p> <p>M: Calls for proposals for the energy efficiency renovation and integrated renovation (seismic consolidation and energy efficiency) for residential buildings. <b>Fulfilled.</b></p> <p>M: Establishing a national support scheme for energy and efficiency renovation and integrated renovation (seismic consolidation and energy efficiency) of multifamily residential buildings. <b>Fulfilled.</b></p> <p>M: Establishing a national support</p>

				<p>scheme for energy efficiency renovation and integrated renovation (seismic consolidation and energy efficiency) for public buildings). <b>Fulfilled.</b></p> <p>M: Signature of contracts for the energy efficiency renovation and integrated renovation (seismic consolidation and energy efficiency) for public buildings. <b>Completed.</b></p> <p>M: Signature of contracts for the energy efficiency renovation and integrated renovation (seismic consolidation and energy efficiency) for residential buildings. <b>Completed.</b></p>
I: Financial instruments for the private sector – Energy efficiency investment in the residential and buildings sector *	0.05	The portfolio guarantee for energy efficiency and renewable energy investments in the residential and buildings sector will include an uncapped portfolio guarantee, partially covered by InvestEU/Romania - the 'First Loss Piece'. The guarantee will be provided by the EBRD to selected financial intermediaries financing eligible final beneficiaries based on predetermined criteria. The guarantee is to be complemented by services to final beneficiaries, financed from funds available in the InvestEU Facility for Romania.	n/a	<p>M: Signature of the contribution agreement between the European Commission and the Romanian Government. <b>Fulfilled.</b></p> <p>T: Finance or investment operations amounting to at least 50% of the total amount of finance or investment targeted, approved by the InvestEU Investment Committee. <b>On track.</b> (Q2/2023).</p>
I: Strengthening the professional capacity of professionals and workers in the renovation sector by developing trainings on energy efficiency construction *	0.01	MDLPA will coordinate the implementation of this investment. The implementation can be done through the development of training courses, organised in partnership with higher education institutions from the National R&D System.	n/a	<p>T: Establishment of certification schemes in the field of energy performance of buildings. <b>On track.</b></p> <p>T: At least 8 000 specialist and workers with a certification for the completion of energy efficiency related trainings. <b>On track.</b></p>
R: Simplified and updated regulatory framework to support the implementation of investments in	0.0015	Developing an intervention methodology for the non-invasive approach to energy efficiency in	n/a	<p>M: Entry into force of the amendments to the existing legislative framework on the</p>

the transition to green and resilient buildings		buildings with historical and architectural value.		multiannual national programme for improving the energy performance of residential buildings. <b>Completed.</b> M: The technical regulatory framework on investments for the transition to green and digital buildings is operational. <b>Completed.</b>
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Source: FENIX, July 2023; Romanian NRRP.

\* The measure does not fall under the policy area energy efficiency.

## All measures

The following table shows all the measures related to energy efficiency of buildings in each case study country, selected based on the criteria presented in the methodology section. The information is based on the FENIX (July, 2023) database.

Table 16 All RRP measures targeting energy efficiency of buildings

MS	Measure	Cost (EUR, mn)
BG	I: Digital transformation of Bulgarian Post and delivery of complex services - renovation	7.76
BG	I: Economic Transformation Programme - Fund 2 Green Transition and Circular Economy: Guarantee financial instrument for energy efficiency and renewable energy - SME support for RES and energy efficiency	37.5
BG	I: Modernisation of educational institutions	277.3
BG	I: Modernisation of the Employment Agency, energy efficiency	0.1
BG	I: Modernisation of the Social Assistance Agency, energy efficiency	1.55
BG	I: Modernising long-term care (incl. energy efficiency renovations)	96.1
BG	I: Support for energy-efficient street lighting systems	76.3
BG	I: Support for the renovation of building stock	924
BG	R: Boosting energy efficiency and renewable energy projects through the energy bills	-
BG	R: Development of definition and criteria for "energy poverty" for households in the Energy Act	-
BG	R: Facilitating and increasing the efficiency of investments in energy efficiency in multi-apartment residential buildings	-
BG	R: One-stop shop	-
FR	I: 'investissements structurants' – 50%	1250
FR	I: 'PAI immobilier' part	1250
FR	I: Ecological Transition fund	13
FR	I: Energy (Thermal) renovations of public buildings	3800
FR	I: Energy renovation and major rehabilitation of social housing	500
FR	I: Energy renovation of private housing, including energy sieves (MaPrimeRénov)	1405
FR	I: Modernisation plan for cultural higher education establishments (renovation part)	64.4
FR	I: Energy renovation of very small enterprises (VSEs) and small and medium sized enterprises (SMEs)	120
FR	R: Revised thermal regulation (RE2020)	-
LV	I: Improving municipal buildings and infrastructure by promoting the transition to renewable energy technologies and improving energy efficiency	24
LV	I: Improving the energy efficiency of multi-apartment buildings and transition to renewable energy technologies	29
LV	I: Improving the energy efficiency of public sector buildings, including historical buildings	57
LV	I: Increasing energy efficiency in business	120
RO	I: Circular economy and increased energy efficiency of historic buildings	15
RO	I: Construction of housing for youth and for professionals in health and education - Construction of energy efficient buildings	282.5
RO	I: Construction, equipping and operationalisation of 110 crèches - Construction of new energy efficient buildings	189

RO	I: Creation of a network of day centres for children at risk of separation - Construction of new energy efficient buildings	1.31
RO	I: Development of 10 regional consortia and the development and equipping of 10 vocational campuses - Construction of new energy efficient buildings	280
RO	I: Development of pre-hospital medical infrastructure - Integrated community centres construction of new energy efficient buildings	28.1
RO	I: Development of public hospital infrastructure (incl. construction of new energy efficient buildings)	571
RO	I: Digitalisation of the judiciary - construction of energy efficient buildings	35
RO	I: Ensuring university infrastructure (homes, canteens, recreation facilities) - Construction of new energy efficient buildings & Energy renovation	260
RO	I: Establishment of a renovation wave fund to finance works to improve the existing building stock	2145
RO	I: Financial instruments for the private sector – Energy efficiency investment in the residential and buildings sector *	500
RO	I: Green-schools network development and purchase of green minibuses - Construction of new energy efficient buildings & Energy renovation (sub-measures)	225
RO	I: Modernisation/creation of museums and memorials - Construction of new energy efficient buildings	15.5
RO	I: Rehabilitation, renovation and development of social infrastructure for persons with disabilities - Construction of new energy efficient buildings	3.36
RO	I: Strengthening the professional capacity of professionals and workers in the renovation sector by developing trainings on energy efficiency construction *	10
RO	I: Support for rural school consortia - Construction of new energy efficient buildings	28.8
RO	I: Transformation of agricultural high schools into professionalisation centres - Construction of new energy efficient buildings & Energy renovation	22
RO	R: Simplified and updated regulatory framework to support the implementation of investments in the transition to green and resilient buildings *	0.015

Source: FENIX, July 2023. \* Not under pillar: green transition; or policy area: energy efficiency.

## Annex 3

### Stakeholders

Table 17 Contributions from stakeholders

Country	Input	Stakeholder type
Latvia	Interview	NGO
	Written inputs	Implementing Ministry
	Roundtable	Implementing Ministry
Bulgaria	Written inputs	Implementing Ministry
	Interview	Planning ministry
	Written inputs	NGO
	Roundtable	Implementing Ministry, planning ministry
Romania	Written inputs	NGO
	Written inputs	Implementing Ministry
	Roundtable	Implementing Ministry
France	Interview	National institute
DG ENER TF.2, B.3	Interview	
	Written inputs	
	Roundtable	

# Annex 4

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