



Rural Energy Efficiency Roadmap (Rentals)



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About RENOVERTY

RENOVERTY will foster energy efficiency building upgrades in the Central and Eastern Europe (CEE), South-eastern Europe (SEE) countries, as well as Southern European countries (SE), by setting the methodological and practical framework to build renovation roadmaps of vulnerable rural districts in a financially viable and socially just manner.

Specifically, the project aims to deliver tools and resources to support local and regional actors to build and execute operational single or multi-household roadmaps for rural areas. A scalable model will also be created to ensure the wide geographical replicability and implementation of the roadmaps by different actors at the EU level. Strategically, the project will contribute to minimising logistical, financial, administrative, and legal burdens caused by a complex and multi-stakeholder home renovation process. Additionally, RENOVERTY will ensure that building retrofits consider the social dimension by incorporating security, comfort, and improved accessibility in the roadmaps to further improve the quality of life of vulnerable populations.

Over the project's three years, seven pilots located in Sveta Nedelja (Croatia), Tartu (Estonia), Bükk-Mak & Somló-Marcalmente-Bakonyalja Leader (Hungary), Zasavje (Slovenia), Parma (Italy), Coimbra (Portugal), and Osona (Spain) will implement the roadmaps, while wider integration of rural and peri-urban development is foreseen in the long run.

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EXECUTIVE SUMMARY

This document represents **the roadmap for renovating households experiencing energy poverty, in rural areas (abbreviated REER)**, with a focus on households in multiapartment buildings in the Zasavje region.

The overall aim of the REER is to promote energy renovations of households experiencing energy poverty. The REER is designed to be a helpful resource to key stakeholders, those being (i) households experiencing energy poverty; (ii) local actors that can help guide households in the process of renovation, particularly Centers for social work, humanitarian organizations, health care workers, and local action groups (LAGs); and (iii) national governmental bodies and local governments that develop and implement policies and measures aimed at alleviating energy poverty.

This REER specifically aims to:

- 1) **Provide essential information to Slovenian households about the process of energy renovation**, with an emphasis on available options for financing energy efficiency measures. This information is gathered and presented in Section 1 of the REER;
- 2) **Enable local actors that have direct access to households to better guide them in the process of renovation**, particularly in the early stages (contacting Eco fund coordinators, applying for funds, etc). Information for local actors is included in Sections 1 and 2.
- 3) **Promote structural improvements to energy renovation processes** of households experiencing energy poverty by identifying barriers to energy renovations and proposing ways to address them that could be implemented by either national actors (ministries, Eco fund) or local governments. The identification and ways of overcoming these systemic barriers are presented in Section 2.

Section 1 of the REER is more technical in nature and draws on the findings of the energy audits that were performed in the pilot region of Zasavje as part of the RENOVERTY project. Section 1 of the REER thus functions as a guide to households for undertaking energy renovation, whereas **Section 2** addresses structural and community aspects of the renovation of households experiencing energy poverty in rural areas by focusing on identifying and overcoming legislative, financial, and administrative barriers.

This REER is a result of a process which included several workshops with a variety of local and national stakeholders such as municipalities, utilities, centers for social work, social organizations, energy and development agencies, local action groups (LAGs) and other actors, including households. It is important to highlight that events with households experiencing energy poverty were informed the creation of the REER, which helped to ensure that the roadmap answers their needs.

Energy poverty

The understanding of energy poverty in this REER stems from the general definition of energy poverty as set in the Commission Recommendation (EU) according to which energy poverty is a situation in which households are unable to access essential energy services¹. However, the REER also follows the more specified definition and criteria for energy poverty as set in the Slovenian Regulation on criteria for defining and assessing the number of energy poor households, which defines energy poverty as *"a situation in which a household with an income below the at-risk-of-poverty threshold is unable to meet its basic energy needs due to inadequate housing conditions or the inability to meet these needs at affordable prices or the low energy efficiency of its dwellings. Basic energy needs include, in particular the costs of heating, hot water, cooling, cooking and lighting."* Based on the criteria set in the Regulation, households experiencing energy poverty are also those that are **receiving state social financial assistance (e.g. social assistance, protection allowance)**. Since the national subsidy system for energy renovation is based on these criteria, the REER follows this narrower definition of energy poverty, which is tied to households that receive state social financial assistance.²

On the pilot region of RENOVERTY project – Region of Zasavje

Slovenia is divided among 12 statistical regions. The Zasavje region is located in central Slovenia, along the banks of the river Sava. It is the smallest region in Slovenia, by surface area (485 km²) and second smallest by number of inhabitants (56.942). However, it is also the third most densely populated region in the country. It covers only four municipalities: Hrastnik, Litija, Trbovlje and Zagorje ob Savi. The average age of the regional population is 45 years. In the past coal mining was the dominant industry in the region and glass industry also has a long tradition in the region. The region has the lowest gross domestic product per capita in the country - 46.1% lower than the national average. This region also has the highest level of serious material deprivation among its population – the living conditions of 4.5% of the population in the region are severely limited due to limited financial resources of the household. However, 10.1% of the inhabitants lived with incomes below the poverty risk threshold, which represented the fourth lowest level among all the regions in the country³.

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¹ COMMISSION RECOMMENDATION (EU) 2020/1563 of 14 October 2020 on energy poverty: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020H1563>.

² PISRS 2025, Uredba o merilih za opredelitev in ocenjevanje števila energetske revnih gospodinjstev: <https://pisrs.si/pregledPredpisa?id=URED8648>.

³ Statistical Office of the Republic of Slovenia <https://www.stat.si/obcine/sl/Region/Index/5>.

region in the country. It covers only four municipalities: Hrastnik, Litija, Trbovlje and Zagorje ob Savi. The average age of the regional population is 45 years. In the past, coal mining was the dominant industry in the region while the glass industry also has a long tradition in the region. The region has the lowest gross domestic product per capita in the country, - 46.1% lower than the national average. This region also has the highest level of serious material deprivation among its population as the living conditions of 4.5% of the population in the region is severely limited due to the limited financial resources of the household. However, 10.1% of the inhabitants live with incomes below the poverty risk threshold, which represented the fourth lowest level among all the regions in the country⁴.



Figure 1: Map of Slovenia by statistical regions, pilot region of Zasavje in red

Larger single or multi-family houses in which only 1 to 2 people live have problems with appropriate heating in winter due to high costs and energy inefficient buildings. Based on the available data of the Statistical Office of the Republic of Slovenia, an estimated 9.6% of all households in the Zasavje region are facing energy poverty, slightly above the national average (7.2%). The number of households experiencing energy poverty is 2000, which corresponds to 3000 individuals experiencing energy poverty in the region⁵. The most at-risk population for energy poverty in Slovenia are the elderly, particularly women. The highest share of households experiencing energy poverty is in single-person households, where the resident is above 65 years old (17%) and is female (17.3%)⁶.

In Slovenia, only 9% of all dwellings are rented dwellings. However, in the region of Zasavje, especially in the municipalities of Hrastnik and Trbovlje, the share of rented dwellings is significantly higher than the national average. In Hrastnik, 29% of all dwellings are rented, and

⁴ Statistical Office of the Republic of Slovenia <https://www.stat.si/obcine/si/Region/Index/5>.

⁵ Statistical Office of the Republic of Slovenia <https://pxweb.stat.si/SiStatData/pxweb/si/Data/Data/0886704S.px/table/tableViewLayout2/>

⁶ Statistical Office of the Republic of Slovenia (2024) Energy poverty by household type <https://pxweb.stat.si/SiStatData/pxweb/si/Data/-/0886702S.px/table/tableViewLayout2/>

in Trbovlje, the figure is 28%.⁷ This is largely due to the high number of dwellings owned by public legal entities, such as municipalities and the National Housing Fund. The tenant population faces a significantly higher risk of poverty. While the at-risk-of-poverty rate among the population that owns their dwellings is 11%, it rises to 26.5% among tenants⁸. Related to this, the prevalence of energy poverty is significantly higher in rental dwellings. Nationally, 7% of households experience energy poverty. However, this rate increases to 15% among tenants, compared to 5.5% among homeowners. In Slovenia, 13,000 tenant households experience energy poverty, affecting approximately 26,000 individuals living in rental dwellings⁹.

In Zasavje, 43% of all inhabited buildings are single-family houses¹⁰. Half of all dwellings in Zasavje were built between 1961 and 1991. Only 7% of all dwellings in Zasavje were built in the last 20 years¹¹. Central heating systems are the predominant mode of heating homes (58% of all homes)¹². District heating covers 25% of all homes, above the national average of 13%¹³. The region, particularly the municipalities of Hrastnik and Trbovlje has one of the highest prices of district heating in the country (above 210 €/MWh)¹⁴. In terms of heating fuel used by households, wood is the most used fuel on the national and regional level (Zasavje), roughly 30% of the households use wood for heating¹⁵.

⁷ Statistical office of the republic of Slovenia (2024) Occupied dwellings by type of ownership for 2023:

<https://pxweb.stat.si/SiStatData/pxweb/sl/Data/-/0861102S.px/table/tableViewLayout2/>

⁸ Statistical office of the republic of Slovenia (2024) At-risk-of-poverty rate for 2023:

<https://pxweb.stat.si/SiStatData/pxweb/sl/Data/-/0867226S.px/table/tableViewLayout2/>.

⁹ Statistical office of the republic of Slovenia (2024) Energy poverty by accommodation tenure status in 2023:

<https://pxweb.stat.si/SiStatData/pxweb/sl/Data/-/0886703S.px/table/tableViewLayout2/>

¹⁰ The Statistical Office of the Republic of Slovenia: <https://pxweb.stat.si/SiStatData/pxweb/sl/Data/-/0861210S.px/table/tableViewLayout2/>

¹¹ Statistical office of the republic of Slovenia (2024) Dwellings by occupancy status and period of construction for 2021

<https://pxweb.stat.si/SiStatData/pxweb/sl/Data/-/0861211S.px/table/tableViewLayout2/>

¹² The Statistical Office of the Republic of Slovenia (2021): <https://pxweb.stat.si/SiStatData/pxweb/sl/Data/-/0861220S.px/table/tableViewLayout2/>.

¹³ Statistical Office of the Republic of Slovenia, 2023: Delež gospodinjstev (%) po glavnem načinu ogrevanja v stanovanju, kohezijski in statistične regije, Slovenija, večletno: <https://pxweb.stat.si/SiStatData/pxweb/sl/Data/-/0886603S.px/table/tableViewLayout2/>-

¹⁴ Agencija RS za energijo (2023) Cene toplote iz distribucijskih sistemov toplote v Sloveniji za mesec januar 2023: https://www.agen-rs.si/documents/10926/394458/Cene-toplote_202301/3ab1886f-0c6e-4f3d-b864-3dfc7db325dd.

¹⁵ Statistical office of the republic of Slovenia (2024) Share of households (%) by main energy source used for heating the dwelling: <https://pxweb.stat.si/SiStatData/pxweb/sl/Data/-/0886608S.px/table/tableViewLayout2/>

1 SECTION 1: Technical considerations for refurbishment of households experiencing energy poverty

1.1 Energy audit

An energy audit is usually the first step in the renovation process. It is a **systematic inspection and analysis of energy use and energy consumption of a building**¹⁶. In simpler terms, an energy audit offers detailed information about the energy characteristics of the dwelling, its energy systems and energy sources, and provides a list of measures identifying methods for improving the overall energy efficiency of the audited dwelling. This type of information is crucial for planning energy renovation.

Based on the results of energy audits, **energy performance certificates (EPCs)** are issued for each dwelling. EPCs are important instruments that help improve the energy performance of buildings. Energy performance certificates are also aimed at providing information to consumers on buildings they plan to purchase or rent. Certificates must be included in all advertisements in the commercial media when a building is put up for sale or rent. They must also be shown to prospective tenants or buyers when a building is being constructed, sold, or rented. After a deal has been concluded, they are handed over to the buyer or new tenant. EPCs should also disclose cost-effective ways and, where appropriate, available financial instruments to improve the energy performance of the building to the owners or tenants of the buildings.

In Slovenia, an EPC must be obtained by the building's owners if the building (or apartment) is to be sold or leased for a new lease (longer than one year). Building owners who do not sell or rent out their properties do not need an energy certificate. An energy certificate must also be obtained for all new buildings. Energy certificates are produced by independent experts with a license. The current list of experts is available on the website of the [Ministry of Environment, Climate and Energy](#)¹⁷.

An EPC includes an **energy performance rating** and **recommendations for cost-effective improvements**. The data on energy performance includes information on the 1) energy for heating (kWh/m²), 2) supplied energy for TSS (technical building systems) operation in buildings (kWh/m²), 3) total primary energy (kWh/m²), 4) CO₂ emissions (kg/m²) and 5) total energy use by energy source and energy products. The EPC also includes recommendations for cost-

¹⁶ "Energy Efficiency in Building Renovation," *Handb. Energy Effic. Build. A Life Cycle Approach*, pp. 675–810, Jan. 2019, doi: 10.1016/B978-0-12-812817-6.00042-5.

¹⁷ Portal energetika, Ministrstvo za okolje, podnebje in energijo: <https://www.energetika-portal.si/podrocja/energetika/energetske-izkaznice-stavb/za-drzavljane/> (dostop 24.7.2024).

effective improvements to energy efficiency and accompanying data on the dimensions of the building, the surface area of the apartment, the year of construction etc.¹⁸

The **cost of obtaining an EPC** is dependent on the type and size of the household, the complexity of the heating, cooling and ventilation system, the documentation provided and the individual contractor, their proximity to the household etc. For a typical single-family house, prices vary between €300 and €400¹⁹. The cost of the EPC could be an initial obstacle to the energy renovation process of households experiencing energy poverty, if an existing EPC would be required to apply for subsidies.

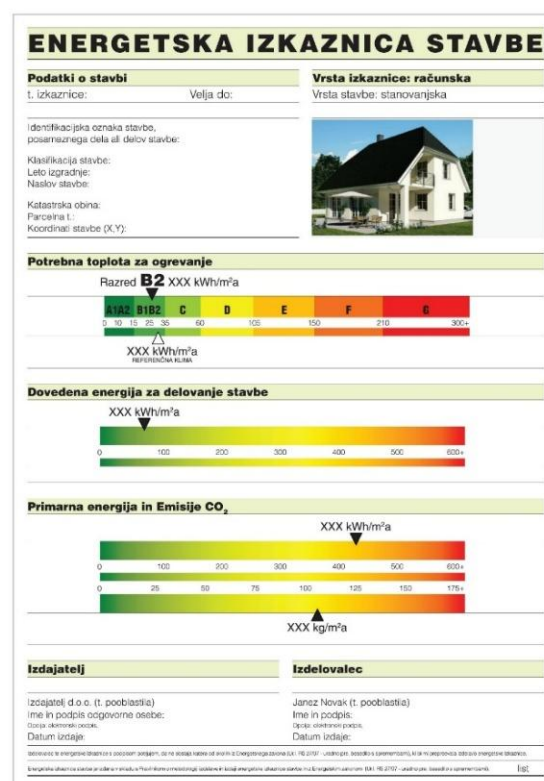


Figure 2: Template of an EPC (first page, data on energy performance)

¹⁸ Portal energetika, Ministrstvo za okolje, podnebje in energijo: <https://www.energetika-portal.si/podrocja/energetika/energetske-izkaznice-stavb/za-drzavljanje/> (dostop 24.7.2024).

¹⁹ Moj mojster, Energetska izkaznica: cena in izdelava energetske izkaznice Dostopno na: https://www.mojmojster.net/clanek/74/Energetska_izkaznica_ali_je_potrebujem (31.7.2024).

1.1.1.1 Findings of energy audits in case of RENOVERTY

A total of 12 single-family, multiapartment and multi-family houses were audited in Zasavje, Slovenia to gain an understanding of the typical energy performance in this sample of homes²⁰. Although the sample size is small, the audits provide insight into the typical energy performance of buildings in the area. On average, three household members live in most of the audited buildings and predominantly occupy the space from 5 pm to 9 am. The year of construction of the audited houses ranges between 1905 and 1975, with the average year of construction being 1942. Most of the audited households have 1 basement level and 3 ground levels, with an average total floor area of 67.75 m².

Out of the 12 audited dwellings, three rely primarily on wood fuels (wood stove, wood oven, etc.), sometimes combined with electric heating (e.g. wood fireplace and electric radiator). Three households are connected to a district heating system (natural gas), two have a central heating system (natural gas boiler - 42 Kw), two rely on electric heating (4Kw) and two use a fuel oil boiler (40kW). Almost all audited households use LED bulbs with a capacity of 2-4W, while only one uses classical bulbs (25-60W).

Half of the audited dwellings in Slovenia have an energy efficiency class F or G (according to the required energy for heating), with an average heat required for primary energy heating of 160 kWh/(m²a). The average primary energy of the audited dwellings is 341 kWh/ m²a.

²⁰ Due to difficulties in communicating and coordinating with one household, there were 11 energy audits done on-site based on which EPCs were created. For the 12th household only, a short visit was possible. Since the household was part of a multi-apartment building, the existing EPC of an apartment in the same building with the same characteristics was used.

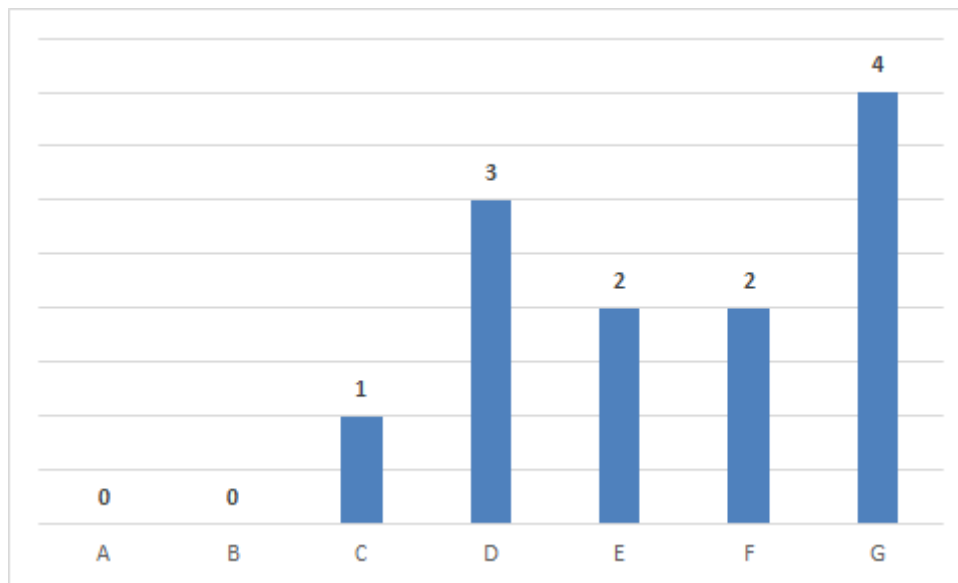


Figure 3: Distribution of energy efficiency classed for audited dwellings in pilot area Zasavje, Slovenia.

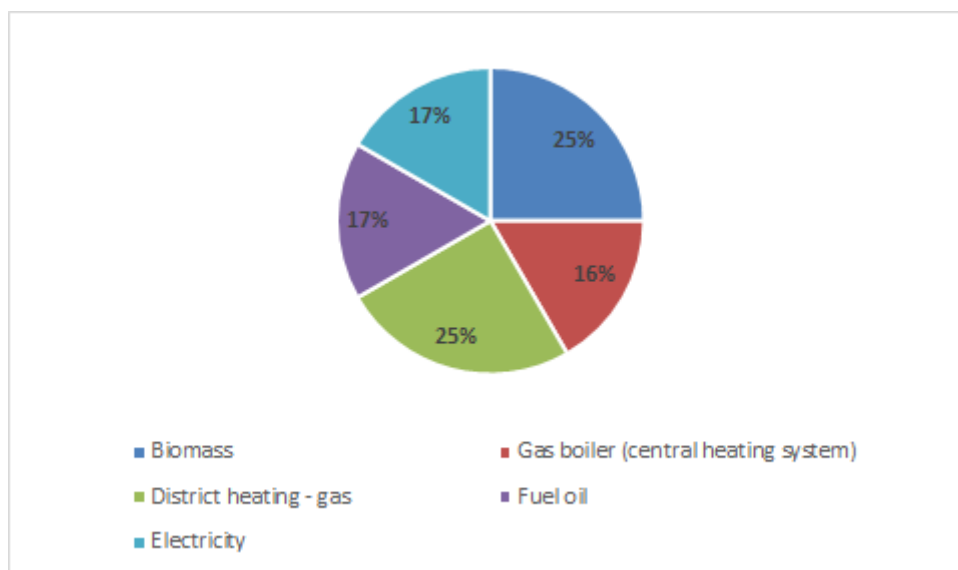


Figure 4: Distribution of heating systems for audited dwellings in pilot area Zasavje, Slovenia.

Most of the audited households (8 out of 12) were rental apartments that were built between 1905 and 1960. Half of all rental apartments have an energy class of **G**, two households fall within the energy class **F**, and two fall within the energy class **D**. In terms of heating, half of the rental households are heated by **gas** (gas boiler/central heating system or district heating system on gas), two use **wood biomass** and one covers their energy needs by **electricity** alone. The average primary energy of rented apartments is 404 kWh/ m²a.

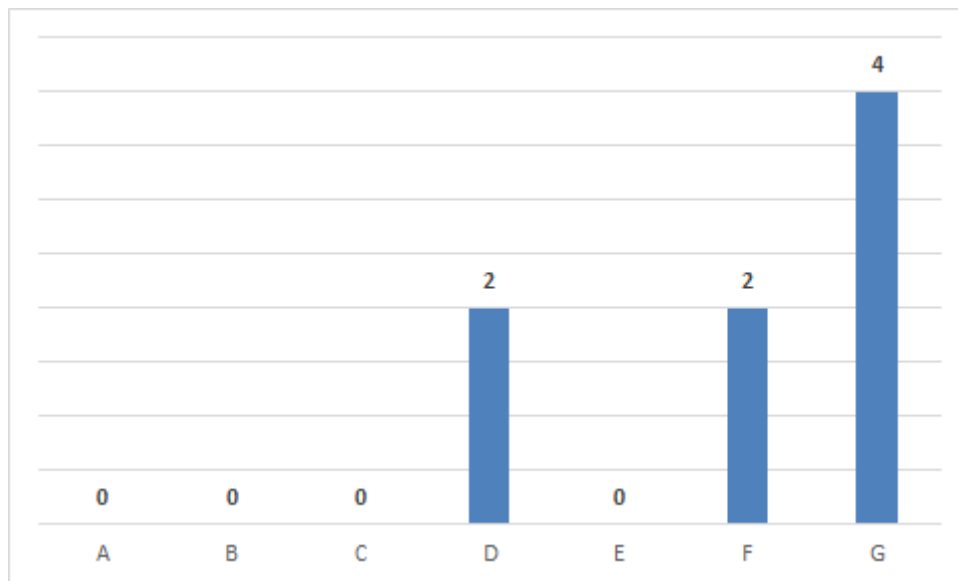


Figure 5: Distribution of energy efficiency classed for audited rental apartments in pilot area Zasavje, Slovenia.

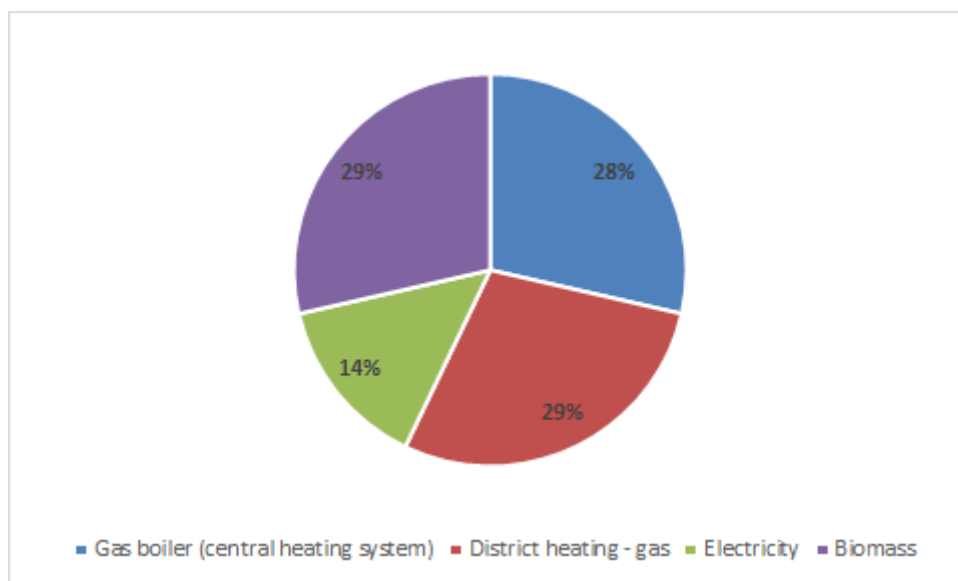


Figure 6: Distribution of heating systems for audited rental apartments in pilot area Zasavje, Slovenia.

1.2 Setting renovation expectations and indicators for rural households

The renovation of households inhabited by those experiencing energy poverty can improve the living conditions, reduce the energy costs, and enhance the overall well-being of these citizens.

The primary objective of implementing renovations is to increase a household’s energy efficiency by upgrading insulation, windows, heating systems, and appliances. This reduces energy consumption, lowering utility bills for families struggling with high energy costs, and decreasing their vulnerability to price fluctuations.

Another key objective is to ensure that homes meet modern health and safety standards. Poorly insulated and inefficient homes often lead to dampness, mould, and inadequate heating, which can cause or exacerbate respiratory issues and other health problems. Renovation efforts, therefore, focus on creating healthier indoor environments.

Additionally, these renovations contribute to broader environmental goals by reducing greenhouse gas emissions. By cutting energy waste, households lessen their carbon footprint, aligning with global efforts to combat climate change.

Finally, addressing energy poverty through renovation supports social equity. Energy-efficient homes enhance the quality of life for low-income families, reducing the disparity between different socioeconomic groups. The renovation of homes experiencing energy poverty not only provides immediate financial relief but also promotes long-term sustainability, health, and social inclusion.

The main goals of energy renovation and related indicators can be divided into four categories:

Goal	Indicator	Indicator value (informative estimate ²¹)
Improved energy efficiency of the building	<ul style="list-style-type: none"> - Improvement of energy rating - Reduction of energy use for heating 	<ul style="list-style-type: none"> - Energy class A-D - up to 105 kWh/m²²²
Reduced energy costs for the household	<ul style="list-style-type: none"> - Reduced monthly utility bills for heating and electricity 	<ul style="list-style-type: none"> - Perceived affordability to meet energy needs (e.g. scale responses to “Is it more affordable to keep your home adequately warm during the winter/cool during the summer” after the renovation?)²³

²¹ These are rough estimates by the authors of REER and are only of informative nature.

²² Based on standards for energy classes used in ECPs. 105 kWh/m² is the upper limit for energy class D.

²³ Quantitative indicator values such as x % decrease in costs or x % of income spent on energy needs are problematic since they do not necessarily demonstrate the affordability of meeting the energy needs of the household.

Improved quality of living (thermal comfort, indoor air quality)	<ul style="list-style-type: none"> - Increase in indoor temperature in winter/ decrease in indoor temperature in summer - Lowered levels of humidity - Elimination of mold 	<ul style="list-style-type: none"> - min. 19 – 21 °C in winter months - max. 28 °C in summer months - 40-60% humidity level - no mould
Reduced climate footprint related to energy use	<ul style="list-style-type: none"> - Reduced CO₂ emissions 	<ul style="list-style-type: none"> - up to approx. 100 kg/m²a²⁴

1.3 Planning the renovation

Planning the energy renovation of a household inhabited by citizens experiencing energy poverty involves several crucial steps aimed at maximizing energy efficiency, reducing costs, and improving comfort. As already mentioned above, an **energy audit** is the first step, which helps to **specify the (priority) renovation measures**. These typically include upgrading insulation, replacing windows and doors, and installing energy-efficient heating, and ventilation. The integration of renewable energy sources, such as solar panels, may also be considered to further reduce energy reliance on non-renewable sources. **Budgeting** is a critical part of the planning process. Detailed cost estimates should be prepared, considering both immediate expenses and long-term savings. A **timeline** is then developed, coordinating the availability of contractors and materials while minimizing disruption to daily life. Proper planning ensures that the energy renovation is cost-effective, efficient, and tailored to the specific needs of the household.

When starting to plan for energy renovation it is important to keep in mind that every individual in Slovenia can sign up for [free energy consult](#) at a selected **local office within the ENSVET network**, which offers individual and independent energy advice and information. These advisors can help households in planning their first renovation steps, including financial resources available.

1.3.1 Planning the renovation – energy audit

Tenants experiencing energy poverty are not eligible for Eco fund subsidy aimed at alleviating energy poverty that covers 100 % of the energy renovation investment, which also includes a simplified energy audit households should check with the owner of the dwelling, whether an EPC for the dwelling already exists. Since a formal energy audit represents an additional financial burden, tenants can gain as much information as possible on the buildings energy characteristics

²⁴ The indicator value is based on the value scales used in ECPs ([here](#)).

from the owners and **consult with an energy advisor** at a **local office within the ENSVET network**.

1.3.2 Planning the renovation – measures

A household can undergo a deep renovation or a phased renovation. **Deep renovation** involves the complete renovation of a building, significantly improving its energy efficiency, often to achieve near-zero net energy consumption. This type of renovation typically addresses various aspects of the building, including insulation, windows, and heating, cooling, and ventilation systems. The goal is to achieve significant reductions in energy consumption and greenhouse gas emissions. Deep renovations often require more extensive work than phased renovations. **Phased renovation** is a gradual and staged approach to building renovation. Instead of carrying out the entire renovation in one step, this method divides the process into individual, more manageable, and gradually achievable steps. In this approach, improvements are identified and implemented in several steps, allowing different areas of the building to be focused on at different times. This allows for better management of available resources, both financial and time, and allows for the effectiveness of the changes made to be assessed before the renovation continues. Particularly due to the financial burden and difficulties with financing deep renovation, the **gradual approach to renovation, where we (based on the energy audit) identify and prioritize key energy efficiency measures** that need immediate attention, is the most relevant for households experiencing energy poverty.

The two energy renovation measures that stand out as the most frequently proposed measures based on conducted energy audits across all dwelling types are: **insulation of the ceiling** and **mechanical ventilation with heat recovery**. A detailed overview of the proposed measures by the conducted energy audits is presented in chapter 2.5. (Annex to section 1).

We also employed the DREEM model (Dynamic high-Resolution demand-side Management) for single-family house and multiapartment building typology to determine the most suitable energy efficiency measures in each pilot case study within the project. Since most rental dwellings are in multiapartment buildings, the findings of the DREEM model for multiapartment buildings are the most useful. Based on the DREEM model, it was established that for multiapartment buildings in Zasavje, the replacement of the existing heating system with an energy-efficient **heat pump** is the *most cost-effective measure* taking into account annual energy savings and levelized cost of saved energy, followed by **(boiler upgrade – gas)** and **(exterior walls insulation)**. A detailed overview of the proposed measures by the DREEM model are presented in chapter 2.5. (Annex to section 1).

There is no specific funding scheme in place specifically for households living as tenants and experiencing energy poverty. Owners or tenants in single family houses or multiapartment

buildings (with the consent of the owner for a partial subsidy (approx. 30% of investment) for the following measures:

- installation of a solar system in a building,
- installation of a wood biomass boiler for central heating of a building,
- installation of a heat pump for central heating of a building,
- replacement of a heating station or installation of a heating station for connection to the district heating system,
- installation of energy-efficient wooden windows in an older building,
- thermal insulation of the facade of an older one- or two-apartment building,
- thermal insulation of a flat roof, pitched roof or ceiling against an unheated space/attic in an older building,
- thermal insulation of the ground floor or the floor above an unheated space/basement in an older one- or two-apartment building,
- installation of ventilation with heat recovery of the exhaust air in the building.

1.3.3 Planning the renovation - budget

There are no national registries of average costs for energy renovation measures. Households and individuals planning to undergo energy renovation can find useful information on the community platform MojMoster.net which connects contractors with clients. Below are the cost estimates for specific renovation measures that are featured on the platform:

MEASURE	COST ESTIMATION (When not specified, costs are not specific to a building typology)	REFERENCE
Insulation of the attic	€/m ²	https://www.mojmojster.net/cene/izolacija_mansarde
Insulation of external walls (16 cm of styrofoam)	€/m ² 40.8-45.6/m ²	https://www.mojmojster.net/cene/fasade_fasaders tvo
Mechanical ventilation with recuperation (450 m ³ /h, house)	€ 4800-8500	https://www.mojmojster.net/cene/prezracevanje

Heat pump with installation (8 kW, air-water)	€6000-12000	https://www.mojmojster.net/cene/toplotne_crpalk_e
Window installation (excl. material)	€/window 60-150	https://www.mojmojster.net/cene/montaza_vrat_in_oken
Solar power plant (incl. Installation)	€/kW180-300 (Based on recent experience with community solar projects, we estimate the costs at €/kW105)	https://www.mojmojster.net/cene/fotovoltaicni_sist_emi
Solar collectors for heating water	€ 3000-5000 (single family house of 200m ²) € 120-240 (15 tube solar collector, without installation)	https://www.mojmojster.net/cene/soncni_kolektorj_i

1.3.4 Planning the renovation – initial steps

Due to the owner-tenant relationship, tenants have very limited control over the decision on performing energy renovation and the timeline of the renovation. The first step in the renovation process, if the tenants initiate it, is thus always reaching a decision/agreement with the owner. As part of the initial steps, tenants (and/or) owners can sign up for free energy consultation at a selected local office within the ENSVET network, which offers individual and independent energy advice and information. These advisors can help households in planning their renovation steps, including a summary of financial resources available. Tenants are also eligible for partial energy renovation subsidies from the Eco fund (consent of the owner for the measures is obligatory) and can apply for these funds once an agreement is reached with the owner. Most rental apartments are in multi-apartment buildings, where renovations to common parts of the building (e.g. insulation of external walls) require the consent of the apartment owners (from 50 to 100% in different cases). More information on this is available in the REER for multi-apartment buildings.

1.4 Barriers and challenges faced by households experiencing energy poverty

1.4.1 Financing the renovation

The main funding mechanism providing subsidies and soft loans for energy efficiency and the use of renewable energy in residential buildings is the **national [Eco fund](#)**. Soft loans and grants are allocated based on public calls for the allocation of funds. To receive the incentive, households must respond to the public call within the time of its duration by submitting an application, if the household meets the eligibility criteria required by the public call. Until the public call is closed, all the applicants proving eligibility are entitled to the Eco Fund's incentive. They aim to keep the public calls open the entire year because this is the least disturbing for the market.

Eco fund allocates funds specifically for energy efficiency measures for households experiencing energy poverty with subsidies that cover 100 % of the cost of different renovation measures - is the [public call ZER 2024](#). However, tenants are not eligible to apply for this funding.

Under the public call [114SUB-OB24](#), tenants (in private rentals) that invest in energy efficiency measures in their rental households can apply for partial subsidy usually in the range of 20 – 40% of the investment (consent of the owner required) for the following measures:

- installation of a solar system in a building,
- installation of a wood biomass boiler for central heating of a building,
- installation of a heat pump for central heating of a building,
- replacement of a heating station or installation of a heating station for connection to the district heating system,
- installation of energy-efficient wooden windows in an older building,
- thermal insulation of the facade of an older one- or two-apartment building,
- thermal insulation of a flat roof, pitched roof or ceiling against an unheated space/attic in an older building,
- thermal insulation of the ground floor or the floor above an unheated space/basement in an older one- or two-apartment building,
- installation of ventilation with heat recovery of the exhaust air in the building.

As opposed to the public call ZER 2024, the households under 114SUB-OB24 apply for funds after the renovation has taken place and need to cover the full cost of investment upfront.

1.4.2 Availability of contractors

Undertaking energy renovation measures, particularly the timeline of the renovation process, is heavily reliant on available contractors who carry out the renovation works. The usual profile of companies involved in energy renovation are companies providing²⁵:

1. thermal insulation services (exterior walls, roof, floor...),
2. installation of windows and doors,
3. installation of mechanical ventilation systems,
4. replacement/installation of biomass heating systems,
5. replacement/installation of gas boilers,
6. installation of heat pumps,
7. installation of self-sufficient solar-power plants.

The process of searching for, choosing and communicating with contractors can be a demanding process accompanied by a lack of trust in contractors (more on this in Section 2 - Technical Barriers). There are some resources available that can help with the process of choosing a contractor:

- List of [contractors by the Eco fund](#). The list is informative. Eco fund places on the list of contractors every contractor who has completed the application form for entry into the list and has a registered activity for the implementation of measures according to the public call ZER. Eco fund does not check the liquidity and references of contractors before including them on the list;
- List of contractors for [renewables investments by Borzen](#). The list is informative. Borzen does not guarantee for the listed contractors and does not assume any responsibility for any business cooperation that would be established when using information from this list;
- Web platform [Moj mojster](#) that connects clients with potential contractors across a wide range of businesses (architecture, construction, carpentry, facade works, windows installation etc.)

In case different measures are undertaken in the renovation process, different companies would also need to be contracted. E.g. contractors installing windows usually do not install mechanical ventilation systems. There is also a risk in contracting smaller-scale companies, since they might have difficulties covering all the costs of the renovation up front. Checking the availability of the best suited contractors in the region is thus an important step in the renovation process.

²⁵ The procurement of materials should be included in the services.

1.4.3 Disturbances in living spaces

The need for relocation during the renovation process can represent a barrier for a household to undergo renovation. However, this has not been identified as a challenge in the region, as perceived by the households. A collection of energy efficiency measures funded by the Eco fund subsidies (window replacement, external wall insulation etc.) have not been associated with demanding relocation, as households can live in their dwelling during the renovation.

1.5 Annex to section 1: Proposed measures based on audits and DREEM model (in detail)

Overall, the two energy renovation measures that stand out as most frequently proposed measures based on conducted energy audits are: **insulation of the ceiling** and **mechanical ventilation with heat recovery**. Below you can find the summary for all audited households.

	Single-family houses
	Multi-family buildings
	Colonies
	Rental situations

Household	Number in table
EPC nb. 2024-808-65-112024	1
EPC nb. 2023-808-65-108679	2
EPC nb. 2023-808-65-110135	3
EPC nb. 2023-808-65-106792	4
EPC nb. 2023-808-65-108655	5
EPC nb. 2024-808-65-112002	6
EPC nb. 2023-808-65-110136	7
EPC nb. 2023-808-65-110138	8
EPC nb. 2023-808-65-110140	9
EPC nb. 2017-461-21-53725	10
EPC nb. 2023-808-65-110132	11
EPC nb. 2023-808-65-110137	12

	1	2	3	4	5	6	7	8	9	10	11	12
Insulation of the ceiling above the basement	X		X									X
Insulation of the ceiling towards the attic	X	X	X	X	X	X		X			X	
Insulation of external walls	X						X	X	X		X	
Mechanical ventilation with heat recovery	X	X	X	X	X	X	X	X	X		X	
Biomass heating	X	X	X								X	
Replacement of the fuel oil boiler with a more suitable one		X										
Installation of thermostatic radiator valves		X										
Installation of the system of solar energy collectors for hot water preparation		X										
Replacement of windows			X									
Installation of photovoltaic panels			X			X						

Elimination of convection thermal bridges and improvement of air tightness				X			X					
Elimination of transmission thermal bridges							X		X			
Replacing lamps with more efficient ones and optimizing the provision of daylight								X				
Installation of a condensation gas boiler										X		

The audited rented households include all the housing typologies (SFH, MFH and colonies). The main proposed energy efficiency measures for rental dwellings are insulation measures, particularly **insulation of the ceiling towards the attic** and installing a **mechanical ventilation system**, followed by **insulation of external walls**.

Measure	1	4	5	6	7	8	11	12
Insulation of the ceiling above the basement	X							X
Insulation of the ceiling towards the attic	X	X	X	X		X	X	
Insulation of external walls	X				X	X	X	
Mechanical ventilation with heat recovery	X	X	X	X	X	X	X	

Biomass heating	X						X	
Installation of photovoltaic panels				X				
Elimination of convection thermal bridges and improvement of air tightness		X			X			
Elimination of transmission thermal bridges					X			
Replacing lamps with more efficient ones and optimizing the provision of daylight						X		

Household	Proposed measure
#1 EPC nb. 2024-808-65-112024	<ul style="list-style-type: none"> • Insulation of the ceiling above the basement • Insulation of the ceiling towards the attic • Insulation of external walls • Mechanical ventilation with heat recovery • Biomass heating
#4 EPC nb. 2023-808-65-106792	<ul style="list-style-type: none"> • Insulation of roof-ceiling in the attic • Elimination of convection thermal bridges and improvement of air tightness • Mechanical ventilation with heat recovery
#5 EPC nb. 2023-808-65-108655	<ul style="list-style-type: none"> • Insulation of the ceiling above the basement • Mechanical ventilation with heat recovery
#6 EPC nb. 2024-808-65-112002	<ul style="list-style-type: none"> • Insulation of the ceiling against the attic • Mechanical ventilation with heat recovery • Installation of photovoltaic panels

#7 EPC nb. 2023-808-65-110136	<ul style="list-style-type: none"> • Insulation of external walls • Elimination of convection thermal bridges and improvement of air tightness • Elimination of transmission thermal bridges • Mechanical ventilation with heat recovery
#8 EPC nb. 2023-808-65-110138	<ul style="list-style-type: none"> • Insulation of the ceiling against the attic • Thermal protection of external walls • Mechanical ventilation with heat recovery • Replacing lamps with more efficient ones and optimizing the provision of daylight
#11 EPC nb. 2023-808-65-110132	<ul style="list-style-type: none"> • Insulation of the ceiling against the attic • Insulation of external walls, • Mechanical ventilation with heat recovery • Heating with a special biomass heating device, Biomass heating
#12 EPC nb. 2023-808-65-110137	<ul style="list-style-type: none"> • Insulation of the ceiling above the basement • Insulation of the roof-ceiling in the attic • Mechanical ventilation with heat recovery • Installation of photovoltaic panels • Transition to ambient heat

We also employed the [Dynamic high-Resolution dE-mand-side Management \(DREEM\) model](#). DREEM to apply an evaluation framework that determined the most suitable Energy Efficiency Measures in each pilot case study of the project. The modelling was done for single- and multi-family house typology (MFH). Since most of the audited rental dwellings were in multi-apartments building, the findings for multi-family house typology are relevant. Considering the specificities of the rural housing stock, the following energy efficiency measures (EEM) were evaluated for the RENOVERTY pilot regions:

- *EEM₁ - Exterior walls insulation*: Insulating the main walls of the building under study from the outside, which commonly have solid walls with no cavities.
- *EEM₂ - Double-glazed windows*: Replacing single-glazing windows with energy-efficient glazing (*Double-glazed windows*) to reduce heat loss.
- *EEM₃ - Roof insulation*: Insulated between and under the rafters of the roof itself, reducing the overall heat transfer coefficient by adding materials with low thermal conductivity (this measure applies only in the case of SFH).
- *EEM₄ - Energy-efficient heating system (Boiler upgrade - gas)*: In this case, the dwelling's outdated heating system is replaced by an efficient gas boiler with a higher efficiency ratio.
- *EEM₅ - Energy-efficient heating system (Boiler upgrade - biomass)*: In this case, the dwelling's outdated heating system is replaced by an efficient biomass boiler with a higher efficiency ratio.
- *EEM₆ - Energy-efficient heating system (Heat pump)*: In this case, the dwelling's outdated heating system is replaced by a heat pump with a higher efficiency ratio.
- *EEM₇ - Energy-efficient lighting*: In this case, the conventional tube lights and bulbs (fluorescent lamps) are replaced by high energy-efficiency ones (LED lamps).

In the baseline scenario, modelling results indicate that the [multiapartment building](#) MFH typology equipped with a gas boiler in the rural region of Zasavje in Slovenia consumes around 19,551.2 kWh annually (almost 317.4 kWh/m²), which is divided into 16,682.1 kWh for its heating needs and 2,869.0 kWh for its cooling and appliances needs.

Based on the DREEM model, it was identified that EEM₆ (heat pump) leads to the highest amount of energy savings (66 % reduction compared to the baseline scenario), while EEM₄ (boiler upgrade – gas) leads to a 13.5 % reduction and EEM₁ (exterior walls insulation) leads to reducing energy consumption by 10.7 %.

According to the analysis, EEM₁ (Exterior walls insulation) and EEM₇ (Energy efficient light bulbs) demonstrate the best performance in terms of NPV (net present value). EEM₂ (Roof insulation), EEM₄ (Boiler upgrade - gas) and EEM₅ (Boiler upgrade - biomass) are not economically viable investments, without any subsidy rate, as they demonstrate negative NPV. More specifically, EEM₄ (Boiler upgrade - gas) becomes an attractive investment for a subsidy rate of at least 25 %.

The replacement of the existing heating system with an energy-efficient **heat pump (EEM₆)** is the *most cost-effective measure* taking into account annual energy savings and levelized cost of saved energy, followed by **EEM₄ (boiler upgrade – gas)** and **EEM₁ (exterior walls insulation)**. On the contrary, EEM₅ (boiler upgrade – biomass) and EEM₂ (double glazed windows) are shown to be the least cost-effective energy-efficient measures due to their high LCSE and the low values of expected annual savings, indicating the need for incentives and initiatives aiming to increase

their cost-effectiveness and lower their investment costs. The model also indicates that that EEM₁ (External wall insulation), EEM₆ (Heat Pump) and EEM₇ (Energy efficient light bulbs) offer the most valuable combinations of NPVs and LCSEs.

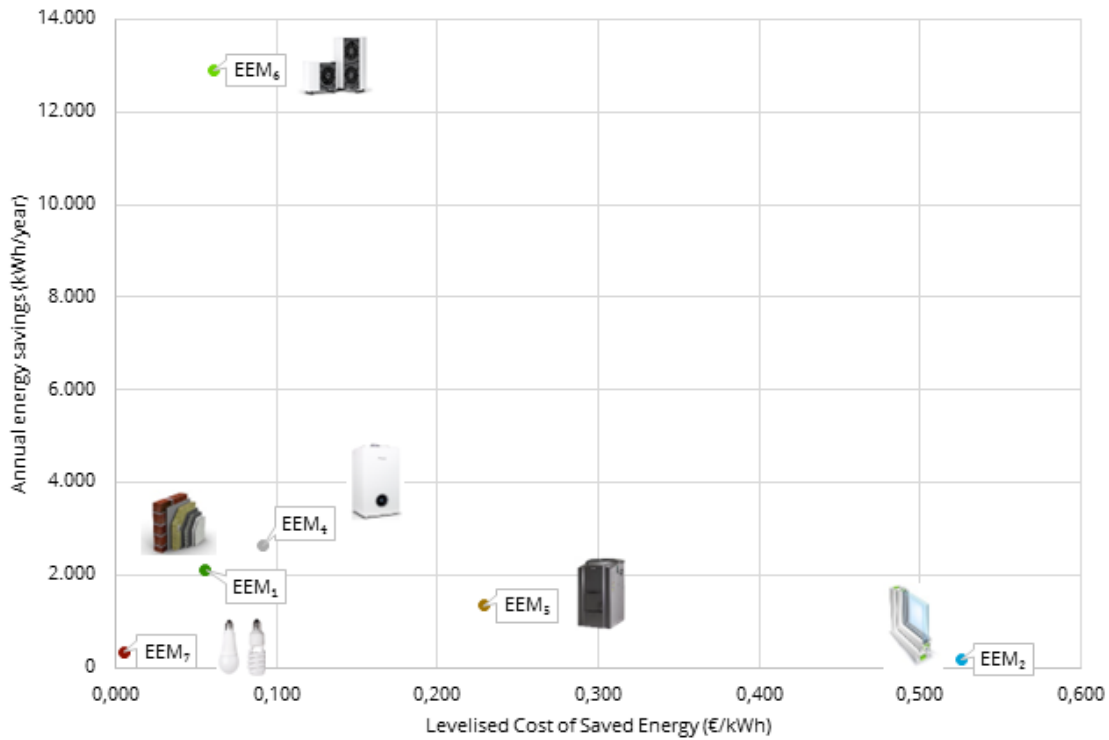


Figure 8: Energy-saving potential and cost-effectiveness of the EEMs under study in the case of the MFH typology (gas boiler) in the rural region of Zasavje in Slovenia.

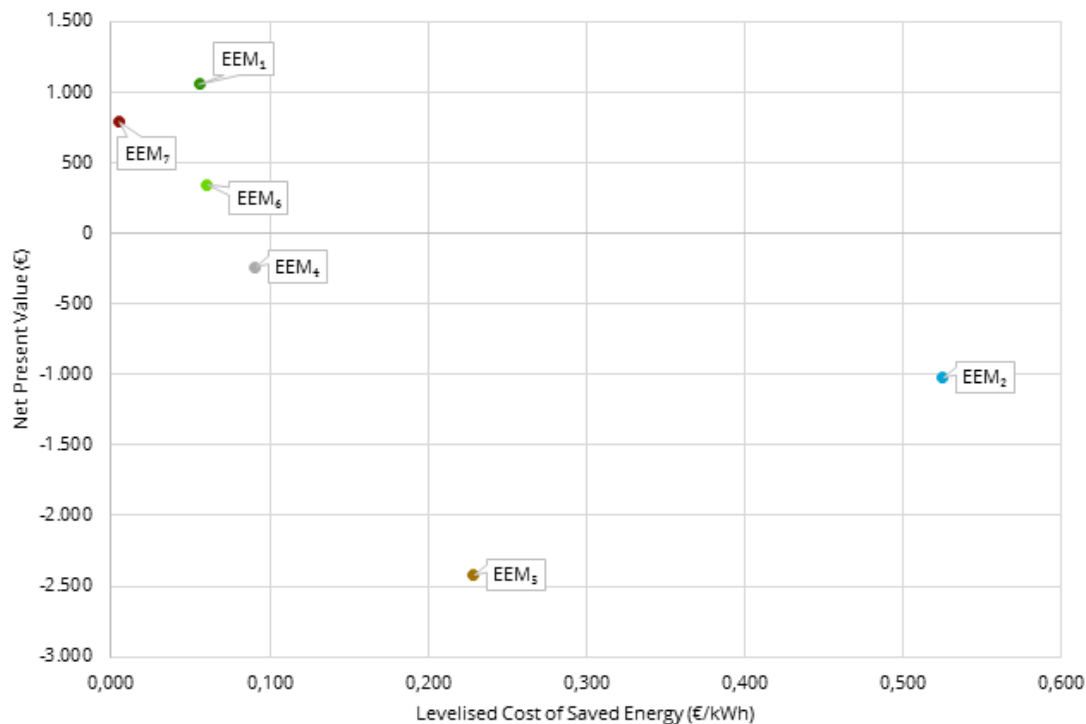


Figure 9:
Profitability and cost-effectiveness of the EEMs under study in the case of the MFH typology in the rural region of Zasavje in Slovenia.

2 SECTION 2: What's next? Conceptualizing and applying actions to reduce energy poverty in rural areas

2.1 Identifying and overcoming structural barriers and challenges

There are numerous structural challenges and barriers in the renovation process of households experiencing energy poverty in rural areas. This section provides an overview of the detected challenges and barriers that should be addressed by relevant national, regional and local actors. The barriers are organized into groups (technical, financial, administrative, legal, and community). The section also provides an overview of possible ways to tackle and overcome the outlined barriers and challenges.

2.1.1 Technical barriers and challenges

BARRIERS AND CHALLENGES	MEASURES FOR OVERCOMING barriers and challenges
<p>DISTURBANCES IN LIVING SPACES</p> <p>Need for relocation during the renovation process.</p>	<p>This can be a potential barrier to the renovation process, but it has not been identified as a challenge in the region, as perceived by the households.</p> <p>Additionally, measures that are funded by the Eco fund are not of such nature (not deep renovation) that they would demand a relocation as households can live in their dwelling during the renovation.</p> <p>In the future, it may become a bigger obstacle due to the increasing necessity of static renovations.</p>
<p>UNAVAILABILITY OF CONTRACTORS</p> <p>At certain periods of the year, contractors can be unavailable due to high levels of demand and a lack of skilled workforce.</p>	<p>To avoid this obstacle, renovations should be scheduled during off-seasons whenever possible.</p> <p>To overcome this obstacle, the owners and the household should ensure timely planning of the renovation and keep in mind the availability of the contractors, also being in constant communication with them.</p> <p>As this challenge is common to all renovations (also renovations in households not experiencing by energy poverty), the government should consider developing policies and measures that</p>

	would enable a better development of the renovation sector in the country (e.g. ensuring proper education programs, rethink the salary policies of the sector...).
<p>UNAVAILABILITY OF CONTRACTORS</p> <p>Contractors across Slovenia are territorially distributed, they mostly carry out work in the region or around its headquarters. In rural areas and smaller regions like Zasavje, the number of suitable contractors might be lower and contractors from other regions might be involved in the renovation. The geographical distance between the location of the contractor and the home under renovation can pose challenges in the renovation process (delays, higher upfront costs due to transport...).</p>	<p>Group purchase or order of renovation works could help to tackle this obstacle. The group purchase could be organized at the municipal level with the municipality acting as the organiser of the group purchase or, alternatively, support of the Consumer Protection Association of Slovenia can be sought. The association has implemented several successful cases of group purchase. In this respect also the stimulation of energy communities, specialised in the renovation, would be beneficial.</p>

2.1.2 Financial barriers and challenges

BARRIERS AND CHALLENGES	MEASURES FOR OVERCOMING barriers and challenges
<p>LACK OF FUNDING FOR TENANTS</p> <p>The roles of landlord-tenant and the problem of split incentives are one of the main barriers when it comes to energy efficiency policy implementation, and alleviation of energy poverty.</p> <p>In Slovenia there is a lack of measures aimed at alleviating energy poverty among the tenant population. There is a lack mechanisms aimed at motivating owners to implement energy efficiency</p>	<p>A separate financing system for tenants should be considered. However, to develop successful (financial) measures, there is a need for a functioning regulation of the rental market and protection of the tenants. On the national level a closer collaboration between actors developing housing and energy (poverty) policies is needed. The Ministry for Solidary Future (housing) should be included in the</p>

<p>measures (and not lead to rent increase). This obstacle is connected to the overall lack of (governmental) oversight and regulation of the rental market.</p> <p>Tenants experiencing energy poverty are also not eligible for the Eco fund ZER 2024 subsidy that covers 100% of investments costs (up to €18000) and represents the main funding system aimed at alleviating energy poverty.</p> <p>Under the public call 114SUB-OB24 tenants can apply for partial subsidy usually in the range of 20 – 40 % of the investment.</p>	<p>coordinating bodies set up by the National Action Plan for Addressing Energy Poverty.</p> <p>In this respect it would also be relevant to analyze the existing examples of good practices in Europe, which are, admittedly, also not numerous. This type of review should be done on the ministerial level with all three key ministries involved (Ministry for environment, climate and energy, Ministry for solidary future, Ministry for labour affairs, family, social affairs and equal opportunity).</p>
<p>LACK OF REGIONAL and LOCAL FUNDS FOR ENERGY RENOVATIONS</p> <p>At the municipal level, there are possibilities to create dedicated funds to stimulate investment in energy renovation of buildings, but these are very limited due to the very low level of fiscal autonomy.</p>	<p>The government should consider legislative changes in the area of local fiscal policy in the direction of more autonomy for dedicating local funds for renovation, as this could significantly improve the situation.</p>
<p>RISE OF ENERGY PRICES</p> <p>Although the government of Slovenia has been managing energy price hikes since the start of the war in Ukraine, energy prices have risen. This is closely linked to the increase in energy poverty.</p> <p>In Hrastnik and Trbovlje – two of the municipalities in Zasavje – households connected to the district heating system are facing high costs of heating, a problem the households have voiced. Often even in the</p>	<p>The existing concessions given by the municipalities to the chosen heating providers (in case of Hrastnik the company Petrol) should be reevaluated due to the high costs for households.</p> <p>However, also alternatives for heating should be considered by the relevant local actors, such as the municipalities or utilities.</p>

<p>case of already renovated households the heating costs remain too high to afford with ease.</p>	<p>Due to the large differences in district heating prices on the national level, the National Energy Agency could review the current methodology for determining district heating prices.</p>
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2.1.3 Legal and administrative barriers and challenges

BARRIERS AND CHALLENGES	MEASURES FOR OVERCOMING barriers and challenges
<p>AVAILABILITY AND IDENTIFICATION OF FUNDING OPTIONS</p> <p>There is a lack of funds targeted at alleviating energy poverty in rental conditions or made available to tenants directly.</p> <p>Under Eco fund’s public call 114SUB-OB24, tenants (in private rentals) that invest in energy efficiency measures in their rental households can apply for partial subsidy usually in the range of 20 – 40% of the investment. In this case the complexity of identifying the Eco fund subsidies one is eligible for as a tenant and applying for them can present a challenge to households experiencing energy poverty in rental situations.</p>	<p>The subsidy scheme Eco fund, aimed at alleviating energy poverty (ZER 2024) provides a coordinator for households, which guides people through the application process. However, since this subsidy does not include the tenant population, the latter (or the owners) do not have such administrative help provided.</p> <p>The Eco fund’s website could enable users to search through open calls also by choosing the ownership type of the dwelling, thus seeing what the options are, if one is a tenant.</p> <p>Local offices of ENSVET network that provide independent energy advice to citizens can also be one way of providing information on available (see awareness obstacles).</p> <p>However, there is a lack of awareness on ENSVET offices as well as other ways to contact the Eco fund. (see awareness obstacles).</p>

<p>CHOOSING A CONTRACTOR</p> <p>Tenants have limited options to choose the contractors; the decision is usually made by the owner.</p>	<p>In the process of choosing a contractor, owners of the apartments can be guided by the list of contractors that Eco fund maintains. The list is informative and does not vouch for the quality of the works. Eco fund places on the list of contractors every contractor who has completed the application form for entry into the list and has a registered activity for the implementation of measures according to the public call ZER 2024. Eco fund does not check the liquidity and references of contractors before including them on the list.</p> <p>Municipalities, which have a better overview of contractors in their local area, could also maintain and annually publish lists of contractors in the region.</p>
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2.1.4 Community barriers and challenges

<p>BARRIERS AND CHALLENGES*</p> <p>Since rental dwellings are most often in multiapartment buildings, we are including two most relevant barriers that have been identified for multiapartment buildings.</p>	<p>MEASURES FOR OVERCOMING barriers and challenges</p>
<p>DECISION MAKING PROCESS IN MULTIAPARTMENT BUILDINGS</p> <p>An agreement between households in the building needs to be made for works to be carried out (excluding window and door replacement). More than 50% is needed for works that are deemed maintenance works, 75% consent to carry out works on common parts of a multi-apartment building that require a building permit, and 100 % consent in case a joint credit is taken for the renovation works.</p>	<p>One measure to overcome this barrier is the involvement of a facilitator to negotiate with the group of residents; a facilitator that does not have any (financial) stake in the renovation (trusted community leader or a reputable local organisation).</p> <p>It is important that the benefits of energy renovation are communicated among residents of the multiapartment building, making them more aware of the current energy efficiency status of the buildings and</p>

	<p>the benefits of energy renovations: financial benefits – lower utility bills, increase in value of the property – and benefits to their comfort of living. This could be done at regular owners' meetings by the building managers</p>
<p>LACK OF INTEREST OF MANAGERS OF MULTI-RESIDENTIAL BUILDINGS</p> <p>The motivation of the managers of multi-apartment buildings is important for the (successful) implementation of energy renovations, but the managers of multi-apartment buildings are not always motivated, or they have no interest in promoting and managing the energy renovation process.</p>	<p>The government and Eco fund could consider financial incentives for managers of multiapartment buildings, e.g. a small % of the investment could be allocated to cover for the manager's additional work.</p>

2.1.5 Awareness and trust barriers and challenges

BARRIERS AND CHALLENGES	MEASURES FOR OVERCOMING barriers and challenges
<p>HOUSEHOLDS / OWNERS</p> <p>Lack of awareness on the benefits of energy renovations, availability of funds and their eligibility. In case of rental situations there is lack of awareness (and motivation) on the side of the owners on the (financial) benefits of energy renovations and availability of funds.</p>	<p>Communication campaigns on the benefits of energy renovations, particularly increasing awareness of the owners on the increase of value of property after renovation, as well as the benefits to long-term maintenance of the apartment/house.</p>
<p>MANAGERS OF MULTIAPARTMENT BUILDINGS</p> <p>Lack of awareness on Eco fund subsidy options for households experiencing energy poverty.</p>	<p>Government and Eco Fund could try to enhance existing information campaigns</p>

	for managers of multi-apartment buildings.
ONE-STOP-SHOP (OSS) Questionable effectiveness of existing one-stop-shops (OSS)	Community outreach programs can be a better option than OSS for raising awareness of the benefits of energy renovations and the availability of funds, or at least they need to be combined with OSS. In Slovenia, there is a network of energy advisers, which could act as OSS, but are usually not a very suitable solution for people, experiencing energy poverty, as they are either not aware of them or are afraid to visit them. However, combining OSS with community outreach programs could be a good approach.

2.2 Identifying all relevant actors and stakeholders

Renovation in households that are experiencing energy poverty is a complex process, not only characterized by technical and financial challenges, but also by challenges related to habits, fears, community etc. Because of this, it is highly important that a network of key actors and stakeholders is in place to support the renovations. It is important that the actors and stakeholders are present and connected on the local level, but also the coordinated action and connections between actors and stakeholders at the national level are important. This chapter provides a list of actors and stakeholders both at the local and at the national level, who are relevant for the orchestrating of the renovation of households experiencing energy poverty, in rural areas, according to the guidelines of this REER, with a focus on households in rental conditions (tenants).

In cases of rental situations, there is a lack of measures tackling energy poverty developed. To develop appropriate measures on the national level, the Ministry of Solidarity-Based Future plays an important role in shaping housing policies, next to the ministries responsible for energy policies and social policies. Public housing companies, housing funds, and municipalities, as the primary owners of public housing, are also key stakeholders in this process.

Key actor or stakeholder	Level	Role (in the energy renovation process)	Link
Ministry of Environment, Energy and Climate	National	Responsible for shaping policies and measures related to tackling energy poverty	Link
Ministry of Labour, Family, Social Affairs and Equal Opportunities	National	Responsible for shaping social support, also co-shaping policies and measures related to tackling energy poverty	Link
Ministry of Natural Resources and Spatial Planning	National	Responsible for keeping national real estate records and shaping policies regarding building permits.	Link
Ministry for Solidary Future	National	Responsible for shaping housing policies and measures (also rental sector)	Link
Ministry of Health	National	Ministry, responsible for shaping health policies and measures	Link
Eco Fund, Slovene Environmental Public Fund	National, regional, local	Responsible for delivery of subsidies for renovation of households, also the ones that are experiencing energy poverty	Link
ENSVET – Energy Advising Network	National, local	Provides energy advising services to households, also the ones experiencing energy poverty.	Link
Municipality of Zagorje	Local	Owns and rents apartments, directs and manages municipal funds, manages concession tenders and contracts local energy suppliers (heating), establishes energy communities.	Link
Municipality of Trbovlje	Local	Owns and rents apartments, directs and manages municipal funds, manages concession tenders and contracts local energy suppliers (heating), establishes energy communities.	Link
Municipality of Hrastnik	Local	Owns and rents apartments, directs and manages municipal funds, manages concession tenders and contracts local	Link

		energy suppliers (heating), establishes energy communities.	
Association of Municipalities and towns of Slovenia	National, local	Provides outreach to municipalities in Slovenia	Link
The Association of Municipalities of Slovenia	National, local	Provides outreach to municipalities in Slovenia	Link
Local energy agencies	Regional, local	Provide energy know-how and support for a variety of actors	Link
Regional Development Agency Zasavje	Regional, local	Implements development related tasks in Zasavje.	Link
Regional development agencies	Regional, local	Implement development related tasks.	Link
Local Action Group Zasavje	Regional, local	<p>Promoting sustainable rural development by uniting various sectors in Zasavje (public, private, civil society sector).</p> <p>Carries out and provides funding for local projects that aim to enhance social inclusion, lower developmental differences across the region, stimulate the economic development of the region and contribute to nature and environmental protection in the region.</p>	Link
Local Action Groups	Regional, local	Promoting sustainable rural development by uniting various sectors (public, private, civil society sector).	Link
Green Hrastnik - Local Energy Community	Local	Can include households experiencing energy poverty in order to provide them with clean energy or to support energy renovation.	Link

Centre for Social Work Zasavje	Regional	Provides social support and services to vulnerable groups regionally	Link
Centre for Social Work Zagorje	Local	Provides social support and services to vulnerable groups locally	Link
Centre for Social Work Trbovlje	Local	Provides social support and services to vulnerable groups locally	Link
Centre for Social Work Hrastnik	Local	Provides social support and services to vulnerable groups locally	Link
Centers for Social Work	Regional, local	Provide social support and services to vulnerable groups locally	Link
Community of Centers for Social Work	National, regional, local	Connects centres for social work nationally	Link
Red Cross Zagorje	Local	Provides humanitarian assistance and social support and services to vulnerable groups locally	Link
Red Cross Trbovlje	Local	Provides humanitarian assistance and social support and services to vulnerable groups locally	Link
Red Cross Hrastnik	Local	Provides humanitarian assistance and social support and services to vulnerable groups locally	Link
Red Cross of Slovenia	National, regional, local	Provides humanitarian assistance and social support and services to vulnerable groups locally	Link
Caritas Zagorje	Local	Provides humanitarian assistance and social support and services to vulnerable groups locally	Link

Caritas Trbovlje	Local	Provides humanitarian assistance and social support and services to vulnerable groups locally	Link
Caritas Slovenia	National, local	Provides humanitarian assistance and social support and services to vulnerable groups locally	Link
ZPM Slovenije	National, local	Provides humanitarian assistance and social support and services to vulnerable groups locally	Link
ZPM Moste Polje	National, local	Provides humanitarian assistance and social support and services to vulnerable groups locally	Link
Slovene Philanthropy	National, local	Promotes and organizes volunteer and thereby provides humanitarian assistance and social support and services to vulnerable groups locally	Link
Association of Pensioners' Societies	National, local	Connects pensioners' associations and reaches out to pensioners	Link
Local construction companies and contractors for different renovation measures	Regional, local	Provide services and equipment needed for renovation	
Housing Fund of the Republic of Slovenia	National	Provides housing and housing management services nationally.	Link
Communal Housing Company Litija	Local	Provides housing and housing management services locally.	Link
Nepremičninski sklad pokojninskega in invalidskega zavarovanja.	National	Provides housing and housing management services locally.	Link

SOP Trbovlje Housing Management	Local	Provides housing and housing management services locally.	Link
Housing company Zagorje	Local	Provides housing and housing management services locally.	Link
NAŠE OKOLJE, Promet z nepremičninami d.o.o Housing Management	Local	Provides housing and housing management services locally	Link
Spekter Trbovlje and Hrastnik Housing Management	Local	Provides housing and housing management services locally	Link
Utility Komunala Zagorje	Local	Provides utility services to the households and can impact the prices of these services	Link
Utility Komunala Trbovlje	Local	Provides utility services to the households and can impact the prices of these services	Link
Utility Komunala Hrastnik	Local	Provides utility services to the households and can impact the prices of these services	Link
Local utilities	Local	Provide utility services to the households and can impact the prices of these services	Link
Association of Property Managers	National	Ensuring professionalism of the work of property managers, connects economic actors operating in the field of real property management.	Link
Institute for the Protection of Cultural Heritage of Slovenia	National, local	Prescribes rules for renovation of objects, subject to cultural heritage rules (such as miners' colonies in Zasavje)	Link
Manufacturers and suppliers of products, equipment and services to increase energy efficiency	Local	Provide works, equipment and services, needed for energy renovation	

Local administrative units	Local	Issue building permits.	
Local administrative unit of Hrastnik	Local	Issues building permits.	Link
Local administrative unit of Trbovlje	Local	Issues building permits.	Link
Local administrative unit of Zagorje ob Savi	Local	Issues building permits.	Link

The actors can have different roles in overcoming challenges related to energy renovation of households experiencing energy poverty. One of biggest challenges in case of tenant situations is developing measures and financial mechanisms on the national level that effectively address the problem of energy poverty in rental conditions. Actors with key important role in **developing measures to promote energy renovations in the rental sector** are: Ministry of Environment, Climate and Energy, Ministry of Solidarity based future, Ministry of Labour, Social Affairs, Family and Equal opportunity, Eco fund, and National housing fund, public housing companies and municipalities.

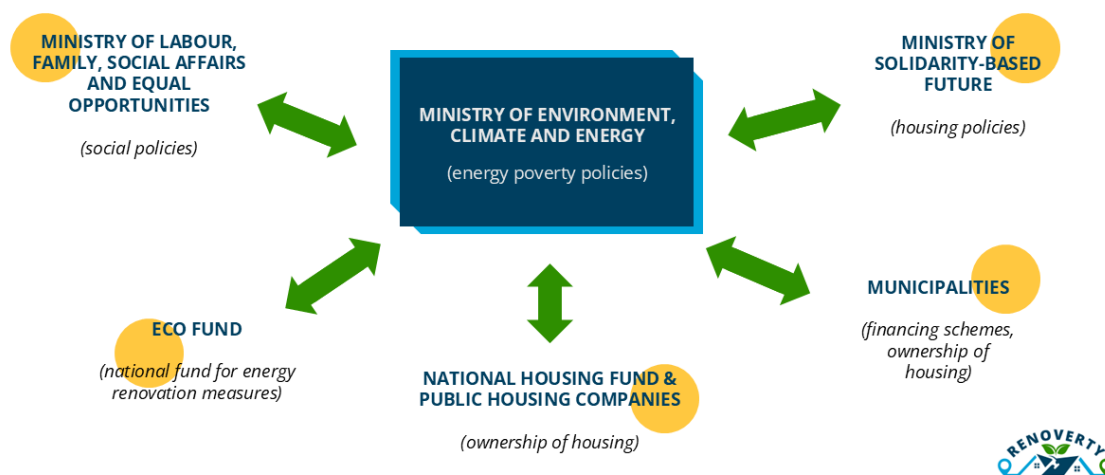


Figure 10: Role of actors (developing measures to promote energy renovations in the rental sector)

2.2.1 Leveraging (EU) financial mechanisms

Leveraging the funds, which are or will be made available through the Recovery and resilience facility/plan (RRF), National Energy and Climate Plans (NECP), RePowerEU, Social Climate Fund and Cohesion funds offer potential for addressing energy poverty in Slovenia.

Perhaps the most significant opportunity to address energy poverty in Slovenia are EU cohesion funds, which have an ongoing program and financing until 2027. Cohesion funds are already

being used by Eco fund to finance energy renovation measures and could be used also by municipalities to fund renovation measures.

The RRF can fund renewable energy installations, energy efficiency upgrades, and social housing improvements aligned with NECP. However, the financing related to RRF focuses on the energy renovation of public buildings, including energy renovation of publicly owned residential buildings. Hence, the RRF funds can be leveraged especially to address energy poverty related to rental situations (e.g. tenants in apartments owned by municipalities etc.)

RepowerEU is one of the pillars of the Recovery and Resilience Plan of Slovenia. Its funding focuses on measures improving energy efficiency of the economy and increasing the share of renewables. The latter could be an opportunity for measures to include households experiencing energy poverty in RES energy communities or to finance the later steps of energy renovation in households experiencing energy poverty (combined installations of heat pumps and solar power plants).

Social Climate Plans, required under the Social Climate Fund (SCF), directly address the challenges of vulnerable groups by funding targeted measures, including energy efficiency upgrades and clean energy adoption, helping alleviate energy poverty nationwide. Slovenia has included some elements of alleviating energy poverty in all the listed measures, but as the Social Climate Plans are currently just in the making, this represents an important opportunity to introduce further measures for alleviating energy poverty.

2.2.2 Scalability and replicability

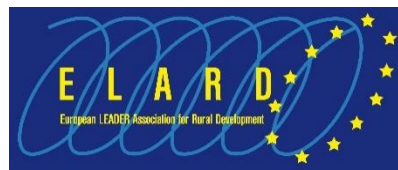
Scalability and replicability are critical factors in ensuring that the roadmap for the renovation of households that are experiencing energy poverty is made available to all relevant actors. These principles ensure that successful strategies can be expanded and adapted to different contexts, reaching a larger population and creating a broader impact.

When composing the REER, attention was paid that the document is composed in a manner to allow scalability and replicability.

To ensure the REER with an emphasis on the national/regional or local benefits of energy renovations proposed in REER, is able to reach all relevant actors, the following activities are planned to ensure the scalability and replicability of the REER: _

- presenting the REER, particularly section 2, to larger national level audiences (ministries, Eco fund, Borzen, researchers, NGOs working in the field of sustainable energy and social affairs),
- presenting the REER, particularly section 1, at annual events of relevant social actors (Centres for social work, humanitarian organizations etc.),
- present the REER to Eco Fund energy advisers and coordinators,

- present the REER to the national network of municipalities,
- mapping other regions to identify stakeholders needed to replicate the REER.



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Co-funded by the European Union under project ID 101077272. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.