CEESEN-BENDER

Building intErventions in vulNerable Districts against Energy poveRty

Deliverable 3.2

Report on building renovation technical and economic barriers in 5 pilot countries and in CEE

Dissemination Level: Public

WP3 Tackling the barriers hindering building related interventions in vulnerable districts

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Authors	Marten Saareoks (TREA)
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Background of the CEESEN-BENDER project

The main goal of the project "Building intErventions in vulNerable Districts against Energy poveRty" (i.e. CEESEN-BENDER), launched on September 1 2023, is **to empower and support vulnerable homeowners and tenants living in buildings built after the Second World War and before 1990's in 5 CEE countries**: Croatia, Slovenia, Estonia, Poland, and Romania. The project will help them through the renovation process by identifying the main obstacles and creating trustworthy support services that include homeowners, their associations, and building managers.

Coordinated by Society for Sustainable Development Design (DOOR), the project CEESEN-BENDER brings together leading European researchers and experts in field from six countries: **Croatia** (Society for Sustainable Development Design / DOOR, Medjimurje Energy Agency Ltd. / MENEA, EUROLAND Ltd. / Euroland, GP STANORAD Ltd. / GP STANORAD), **Estonia** (University of Tartu / UTARTU, Tartu Regional Energy Agency / TREA, The Estonian Union of Co-operative Housing Associations / EKYL), **Slovenia** (Local Energy Agency Spodnje Podravje / LEASP), **Romania** (Alba Local Energy Agency / ALEA, Municipality of Alba Iulia / ALBA IULIA), **Poland** (Mazovia Energy Agency / MAE, Housing Cooperative Warszawska Spółdzielnia Mieszkaniowa - The Warsaw Housing Cooperative / WSM), **Germany** (Climate Alliance) in addition to **Central Eastern European Sustainable Energy Network** (CEESEN).

The project CEESEN-BENDER is carried out from September 2023 until August 2026 and has a total budget of €1,85 million, of which €1,75 million is funded from the European Union's Programme for the Environment and Climate Action (LIFE 2021-2027) under grant agreement n° LIFE 101120994.

As stated, the **main objective** of CEESEN-BENDER is to empower and support vulnerable homeowners and renters living in multi-apartment buildings (MABs) through the renovation process by identifying the main obstacles, and creating trustworthy support services that include homeowners, their associations, and building managers.

Therefore, the **detailed objectives** for CEESEN-BENDER are stated below:

- The project will analyse the ownership structure and physical characteristics of buildings in the pilot sites in targeted regions to comprehensively understand the obstacles that impede or halt homeowner associations, landlords, and property managers from pursuing energy renovations.
- Project partners will identify both legislation and financial, and technical administrative obstacles for the renovation in pilot countries. The identification of obstacles from the homeowners' perspective will help the creation of tailor-made solutions not only for homeowners but also for building managers, landlords, municipalities and other relevant stakeholders involved in the renovation process.
- Through the project, methods and tools that can be used to address different aspects of energy poverty will be developed. This includes:

    - Data gathering on energy poverty in the pilot sites;
    - A digital tool identifying buildings with high levels of energy poor households in the greatest need of renovation.
    - A model of potential savings in buildings undergoing renovation, and a tool for calculating the return on investment for energy renovations.

- 5 Pilot area roadmaps will be developed that prioritize building renovation based on their potential for maximizing emissions reduction via energy savings as well as an increase of quality of life and wellbeing for vulnerable homeowners.

- Within the 5 pilot areas, at least 30 building-level roadmaps will be created that specify the technical details for renovations. These pilot buildings will be supported in the entire pre-construction phase, drawing of plans, applying for permits, audits or other requirements and for financing. Plans will call for the decarbonization of the heating and cooling supply and integration of renewable energy sources (RES), to produce energy to cover its own consumption.

- Also, a support system for homeowners, municipalities, and other large owners of multiapartment buildings (MABs) in targeted regions will be created to speed up the renovation process, by:
    - Advising at least 3.500 homeowners, landlords and building managers on legal, financial, technical and other aspects of energy renovations.
    - Advocating for changes of regulatory requirements and policies to lower the costs and time needed for the preparatory phase of projects.
    - Train at least 30 energy professionals on energy poverty and related topics.

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Executive Summary

Within the CEESEN-BENDER project—dedicated to advancing and enhancing the accessibility of renovation in pilot countries (Croatia, Estonia, Slovenia, Poland, and Romania)—it is essential to obtain a comprehensive overview of technical and economic barriers. This document synthesises and analyses these challenges based on national reports prepared within the project, with the aim of identifying Central and Eastern European (CEE)-level barriers across the five participating nations.

The document draws on expert survey responses from spring 2024 and country-specific reports, supplemented by input from national renovation experts—reflecting insights up to the end of 2024. The analysis is underpinned by the project partners' extensive and diverse experience in regional renovation initiatives.

Renovating buildings presents a complex challenge that demands financial, technical, and policy-driven solutions. Homeowners across various countries face substantial barriers, ranging from high upfront renovation costs to difficulties in accessing information and navigating administrative procedures. This report offers insights from pilot countries, highlighting the main obstacles to renovation, while also sharing the motivations and needs of homeowners.

Homeowners are primarily driven by financial incentives, such as access to grants and potential savings on ongoing costs, though rising inflation and increased financing charges have often offset expected energy savings. Urgent needs also arise from severe building issues, including failing systems and structural deterioration.

Key barriers include limited and unpredictable grant schemes, a general lack of awareness about the benefits of renovation, and financial constraints due to the absence of innovative funding solutions. Additionally, most countries face a significant shortage of skilled labour—with Estonia as an exception—while Estonia, Poland, and Croatia also struggle with a lack of specialised construction companies and designers.

To address these challenges, recommendations focus on improving communication and raising awareness about renovation, enhancing technical support, and making renovation financing more flexible yet clear. Furthermore, these efforts may necessitate the strengthening of policy frameworks to ensure predictable renovation programmes and improve the overall efficiency of the renovation sector.

Based on the insights gathered, the following key recommendations are made to improve the renovation process and address the barriers faced by homeowners:

1. **Communication and Awareness of Renovation Benefits and Possibilities:** Effective communication and awareness-raising about the benefits and possibilities of building renovation are crucial. Homeowners need a better understanding of available grants, the true condition of their buildings, and the importance of addressing issues early to prevent more costly repairs later.
2. **Technical Support and Capacity Building for Renovation:** In addition to grant schemes, technical support for renovation projects should be improved. One-Stop Shop (OSS)-type services could help overcome barriers for energy-poor and vulnerable households, providing guidance throughout the renovation process. Furthermore, training for both public sector workers and homeowners is

necessary to address skill gaps and ensure more effective renovation project management.

3. **Financing Solutions for Renovation: Ensuring Accessibility and Flexibility:** Long-term improvements in financing mechanisms are needed to ensure stability and predictability. Regular and transparent grant calls, flexible financing models (such as green loans for deep renovations), and better collaboration with banks to improve loan conditions will enhance accessibility and affordability. Tailoring financial options to meet diverse household needs, particularly in areas with low property values, will further support homeowners in financing renovations.

These actions are essential for making renovation initiatives more effective and inclusive, improving living conditions, and contributing to energy and climate goals.

1. Relevance of this Deliverable

The relevance of this deliverable, Deliverable 3.2 - Report on building renovation technical and economic barriers in 5 pilot countries and in CEE, lies in its role within the CEESEN-BENDER project's broader goal of supporting vulnerable homeowners and renters in multiapartment buildings (MABs) through the renovation process. While Deliverable 3.1 addressed regulatory barriers, this report, Deliverable 3.2, specifically examines the technical and economic challenges that impact renovation efforts. By identifying key obstacles—such as rising capital costs, labour shortages, and financing difficulties—this analysis provides a regional overview of renovation barriers across the CEE area. The insights gained contribute to the development of targeted support services for homeowners, associations, and building managers, ultimately strengthening policy recommendations and facilitating more effective renovation strategies in vulnerable districts.

2. Introduction

The outputs of this task are national and CEE-level reports on building renovation technical and economic barriers. To support their development, a comprehensive national-level baseline analysis will be conducted in five pilot countries (Croatia, Estonia, Slovenia, Poland, and Romania) to examine these barriers. These insights will directly shape five national reports and a synthesized CEE policy report, providing targeted recommendations for decision-makers at both the national and EU levels.

Inputs and insights were gathered from project partner organizations who bring significant experience in the field as project partners have been working extensively on renovation topics in their regions for many years and possess diverse experience in the renovation sector, including with past projects and works. The findings and final outcomes are built on the knowledge, expertise, and experience of these partners, particularly in the areas of energy renovation, energy poverty, and engagement with homeowners and tenants.

The partners' insights were collected through a structured questionnaire designed to assess the national-level status, challenges, and opportunities. These responses were further refined through a feedback loop in the development of national reports, incorporating input from partners' experts with practical experience in energy renovation projects and community engagement. Their contributions form the foundation of this report, ensuring its relevance and applicability to both national and regional contexts

The questionnaire was developed with six main sections:

- Energy Poverty Policy
- Renovation Market
- Renovation Models
- Renovation Grants
- Renovation Motivations
- Renovation Challenges and Barriers

The questionnaire was designed in early 2024, with responses collected by mid-year, meaning the initial input reflects the situation as of April 2024. The initial survey was conducted using the EUSurvey platform, and the questionnaire can be found in Annex 1 of this document. The responses were then analysed, and country-specific reports were developed in collaboration with national experts. The process, varying by partner, was finalised between November and December 2024, meaning the findings in this document are based on the knowledge and context as of late 2024.

During the finalisation process, the report format was refined to improve clarity, consistency, and usability for decision-makers. Each national report now follows a harmonised structure consisting of six concise sections:

- **Summary and Recommendations** – Presents the main findings and conclusions, starting with a short overview and followed by key recommendations. Recommendations begin with a bold introductory statement and are supported by concise explanatory points that reflect validated expert input.
- **Overview of the Renovation Landscape** – Provides a descriptive analysis of the national renovation market, typical renovation types and costs, and recent trends or developments.
- **Homeowner Motivation in Multi-Apartment Buildings** – Summarises the main motivators for homeowners, presented primarily in bullet format, with a brief introductory and concluding paragraph to contextualise the findings.
- **Barriers to Renovation** – Describes the most relevant human-capital and market barriers, organised into thematic paragraphs. Barriers identified as non-priority are also mentioned, with reasoning for their exclusion.
- **Energy Poverty Context** – Provides a short text summarising the national situation regarding energy poverty and its relation to renovation policy.
- **Background and Methodology** – Explains the expert-survey basis, validation process, and preparation timeline, as well as the link between national and CEE-level report within Deliverable 3.2.

This structure enables direct comparison between countries while maintaining national specificity and reflecting the validated expert perspective.

Based on these national reports, a comparative assessment of building-renovation technical and economic barriers in Central and Eastern Europe (CEE) is presented in the following sections, drawing on findings from the five participating countries.

3. Comparative Insights and Findings in Selected CEE Countries

This section presents key insights derived from the national-level policy reports. The national findings are summarised here, with more detailed information about each country available in the national reports. The comparative analysis at the CEE level explores the similarities and differences across the five participating countries—Croatia, Estonia, Slovenia, Poland, and Romania—highlighting regional trends, policy implications, and emerging patterns in areas such as energy poverty, renovation motivations, barriers, and renovation markets. This approach provides a deeper understanding of the common challenges, motivations, and barriers to building renovation in the region, offering valuable insights for policymakers and stakeholders. Further analysis is provided in the following subsections, which delve into the status of energy poverty policies, motivations for renovation, barriers to renovation, and the renovation markets across these countries.

3.1. Energy Poverty Policy Status

Despite varying levels of policy development, a common gap across Croatia, Estonia, Poland, and Romania is the absence of specific renovation support measures for energy-poor households. Only Slovenia stands out with dedicated support mechanisms. While Estonia, Poland, and Slovenia have legal definitions of energy poverty, Croatia and Romania still lack comprehensive frameworks. In Croatia, for instance, there is no nationally adopted definition or methodology for monitoring energy poverty, leaving many vulnerable households hidden and unsupported. Similarly, Romania lacks clear indicators, limiting local authorities' ability to assess and address the issue effectively.

Additionally, the monitoring of energy poverty at a more local level remains insufficient across most countries, making it difficult to target support effectively. In Estonia and Poland, energy poverty is integrated into existing social welfare systems, but there are no dedicated renovation grants for energy-poor households. Croatia provides vulnerable consumers with a flat €70/month energy cost compensation, but without a broader renovation strategy, this does little to improve long-term energy efficiency.

Slovenia stands out as the only country with a structured approach, as its regulation under the Electricity Supply Act defines energy poverty, sets criteria for identifying affected households, and includes dedicated reconstruction support measures. Addressing these gaps across other countries would require clearer definitions, improved monitoring systems, and targeted financial and policy support to reduce energy poverty through energy-efficient renovations.

3.2. Motivations For Renovation

Homeowners' motivations for renovation across Croatia, Estonia, Poland, Romania, and Slovenia are primarily driven by financial considerations, technical deficiencies, and housing conditions. The most common motivators are the availability of grants and the desire to reduce monthly living costs, both of which are key drivers in all five countries as shown on Table 1. However, while energy savings are often linked to renovation efforts, they are only a motivating factor in 60% of the studied countries (Croatia, Poland, and Romania), as homeowners do not always experience direct financial benefits due to additional loan repayments and post-renovation expenses.

Table 1 Homeowners' Motivations for Renovation

Homeowners' main motivations for renovation	Estonia	Croatia	Poland	Slovenia	Romania	% of Countries
Availability of grants	x	x	x	x	x	100%
Reducing living (monthly) costs	x	x	x	x	x	100%
Energy savings		x	x		x	60%
Greenhouse gas emissions reduction						0%
Poor and failing systems (e.g., electrical, water, heating, sewage)	x	x	x	x		80%
Poor and dangerous structural condition (e.g., roof, balconies, bearing walls)	x	x	x		x	80%
Aesthetics of the building		x	x			40%
Indoor climate problems (e.g., ventilation/humidity/mould, hot/cold)					x	20%
Poor living conditions that are not corresponding to today's norms/ expectations	x		x			40%
Real estate value		x			x	40%

The availability of subsidies is a critical factor across all countries, reinforcing the importance of financial incentives in renovation decisions. Additionally, the motivation to reduce monthly living costs is universally significant, demonstrating that economic considerations remain the primary driver behind renovation efforts. Technical deficiencies, such as failing electrical, water, heating, and sewage systems, as well as poor structural conditions (e.g., deteriorating roofs, balconies, and bearing walls), also strongly influence homeowners' decisions to renovate.

Energy savings are an important motivator in three of the five studied countries. However, in Estonia, Croatia, and Slovenia, homeowners report that renovations can lead to higher monthly expenses rather than cost reductions. This occurs when additional loan repayments and increased post-renovation energy costs (including mandatory contributions to renovation funds) outweigh the expected energy savings. This challenge highlights a mismatch between expectations and actual financial outcomes in some countries.

Aesthetic improvements and modernization of outdated living conditions are major drivers in Croatia and Poland, while increasing property value is particularly relevant in Croatia and Romania.

Indoor climate improvements—including better air quality and temperature regulation—are not widely prioritized, except in Romania, where concerns about ventilation, humidity, mould, and thermal comfort are more significant. This suggests that in most countries, awareness of indoor climate issues is low, or residents may not fully recognize their home's indoor climate conditions.

Finally, reducing greenhouse gas emissions is not a motivating factor in any of the studied countries. Despite strong policy emphasis on emissions reduction at the

European and national levels, homeowners do not perceive direct benefits, making it the lowest priority. This highlights a need for greater awareness-raising efforts to emphasize the role of individual actions in achieving climate goals.

3.3. Barriers to Renovation

Despite the multiple motivations for renovation, although primarily financial, homeowners in Croatia, Estonia, Poland, Romania, and Slovenia face multiple other barriers, such as human capital, technological, and awareness-related barriers that slow down renovation efforts. Addressing these barriers is crucial to unlocking the full renovation potential in these countries.

A significant challenge across the studied countries is the shortage of skilled professionals required for renovation projects as seen in the Table 2. Skilled labour shortages are particularly critical, with 80% of countries reporting a lack of skilled workers at renovation sites. Additionally, designers of special parts and construction companies specializing in renovations are lacking in 60% of the countries, which affects project planning and execution. Estonia specifically reports a lack of consultants and designers, especially designers of special parts (e.g., heating, ventilation, and air conditioning (HVAC) designers) that is connected with high requirements and ambitious targets in renovation projects, but also that renovation works comes in big waves based on hectic grant calls. Poland highlights the shortage of supervisors overseeing renovation works. Romania reports that the administrative burden and lack of staff make the management of MAB renovation projects particularly difficult. Romania also notes the absence of skilled energy experts at renovation sites, which can limit the effectiveness of energy-efficient renovation measures. These shortages can lead to delays, increased costs, and lower-quality renovations, making it difficult for homeowners to proceed with their projects.

Table 2 Human capital barriers

Lack of human capital	Estonia	Croatia	Poland	Slovenia	Romania	% of Countries
Designers	x					20%
Designers of special parts	x	x	x			60%
Construction companies performing renovations.	x	x	x			60%
Skilled workers (at renovation site)		x	x	x	x	80%
Consultant	x					20%
Supervisor			x			20%

Homeowners also face several economic, financial, and technological barriers that impact their ability to renovate as seen from Table 3. The availability of renovation grants is a key factor in all five countries, indicating that financial incentives are essential to supporting renovations. However, grant conditions—such as eligibility criteria and application processes—are identified as barriers in Poland and Romania, potentially discouraging some homeowners from applying.

Table 3 Financial, Awareness, and Technological Barriers to Renovation

Barriers affecting renovation	Estonia	Croatia	Poland	Slovenia	Romania	**% of Countries**
General awareness of renovation		x	x	x		60%
Renovation support systems			x		x	40%
Renovation grants availability	x	x	x	x	x	100%
Renovation grants conditions			x		x	40%
Loans availability (e.g., banks not giving loans for renovation)	x		x			40%
Lack of funds from owners/occupants	x	x	x			60%
Good examples			x	x		40%
Technology availability					x	20%
Innovative technological solutions		X				20%
Innovative financial solutions		x		x	x	60%

General awareness of renovation is a significant issue in 60% of the countries, particularly in Croatia, Poland, and Slovenia. Many homeowners lack knowledge about the benefits, processes, and available financial support, which can result in hesitation or delays in undertaking renovation projects.

Financial barriers are also widespread. Limited access to loans is a problem in Estonia and Poland, particularly in regions with low property values, where banks are less willing to finance renovations. A lack of personal funds among owners and occupants is a major issue in Estonia, Croatia, and Poland.

In addition to financial constraints, access to good examples of successful renovations is a barrier in 40% of the countries (Poland and Slovenia), highlighting the need for more demonstration projects and case studies. And on the technological side, Romania reports issues with technology availability, while innovative technological solutions are lacking in Croatia. Additionally, innovative financial solutions—such as new loan structures or cooperative financing models—are missing in Croatia, Slovenia, and Romania, limiting alternative ways to fund renovations.

3.4. Renovation Markets

Renovation markets in Croatia, Estonia, Poland, Romania, and Slovenia exhibit varying levels of development and face specific challenges. Renovation is desired in all these countries, but progress is often hindered by obstacles such as financing issues, market structure, and labour shortages. In Croatia, Poland, and Slovenia, partial renovations (roofs, facades, and windows) are the most common, while in Estonia, deep renovations are more frequent, albeit with higher initial capital costs.

The pace of renovation varies across countries. In Estonia, activity has slowed due to rising costs and the anticipation of a new national renovation grant call. Conversely, Croatia has experienced an increase in renovation activity, though private investments remain largely untracked. In Poland and Romania, renovation levels have remained stable, with Romania expecting growth primarily in colder regions. Slovenia lacks comprehensive national data, but some areas are already well-renovated.

Renovation costs are difficult to compare across countries, as they depend on local practices, project scope, material prices, and—most importantly—labour costs, which vary significantly. Renovation is a high-capital investment with a low return on investment, making external financial support essential. Most homeowners lack the funds to finance renovations independently, leading the sector to rely heavily on grants and loans, where availability and conditions vary.

Loan accessibility differs across countries and regions. In Estonia, loans for renovation are more accessible in major cities, whereas lower real estate values in smaller municipalities often limit loan amounts. In Romania, homeowners rarely take out renovation loans, choosing instead to absorb higher energy costs. Some Central and Eastern European (CEE) countries offer "green loans" for renovations that achieve higher energy efficiency standards, providing more favourable lending conditions.

3.4.1. Renovation practices

The following tables outline the most common interventions in partial renovations, followed by interventions typically included in deep renovations. As shown, deep renovations involve a significantly broader scope of work, further reinforcing the point that renovation costs cannot be easily compared across countries.

Table 4 Partial renovation most common interventions

Partial renovation main interventions	Estonia	Croatia	Poland	Slovenia	Romania	% of Countries
Roofing replacement	x	x				40%
Roof/attic insulation				x	x	40%
Arranging the facade of the building						0%
Insulating the building walls		x	x	x	x	80%
Arranging the foundation of the building						0%
Insulating the foundation of the building				x		20%
Replacing windows	x	x	x	x	x	100%
Replacing exterior doors	x	x	x	x		80%
Renewal of the heating system	x			x		40%
Construction/renovation of the ventilation system						0%
Upgrading the electrical system	x					20%
Renewal of sewerage						0%
Renewal of the water supply system						0%
Installing solar panels			x			20%
Insulating and arranging end walls of the building						0%

Partial renovations tend to focus on replacing windows, doors, and roofs, as well as insulating walls. Replacing windows and doors with more energy-efficient ones, as well as at least roof covering replacement, has often been done out of necessity 10 to 20 years ago. Notably, window replacements have often been a homeowner-driven

decision, financed independently from broader renovation projects. Both in Estonia and Slovenia, updating heating systems has been considered necessary.

Deep renovation as a term has been known by homeowners in all countries, but only in Estonia has it been the preferred option, thanks to long-term awareness-raising efforts and a support system that has not only focused on financial aid but also on establishing other support mechanisms (e.g., the technical consultancy expertise level developed by the funding body).

Table 5 Deep renovation's typical interventions

Deep renovation' interventions	Estonia	Croatia	Poland	Slovenia	Romania	% of Countires
Roofing replacement	x				x	40%
Roof/attic insulation	x	x	x	x	x	100%
Arranging the facade of the building	x		x		x	60%
Insulating the building walls	x	x	x	x	x	100%
Arranging the foundation of the building	x			x	x	60%
Insulating the foundation of the building	x				X	40%
Replacing windows	x	x	x	x	x	100%
Replacing exterior doors	x	x	x	x	x	100%
Renewal of the heating system	x		x	x	-	60%
Construction/renovation of the ventilation system	x		x			40%
Upgrading the electrical system	x					20%
Renewal of sewerage						0%
Renewal of the water supply system						0%
Installing solar panels			x			20%

Core deep renovation measures such as roof/attic insulation, wall insulation, and the replacement of windows and exterior doors are common across all the analysed countries, reflecting a shared focus on improving airtightness and energy efficiency. However, less frequently adopted but still important interventions, like foundation insulation (Estonia, Romania) and heating system renewal (Estonia, Poland, Slovenia), are part of the renovation packages in some countries but not universally implemented. Ventilation system construction (Estonia) and solar panel installations (Poland) are relatively rare in deep renovation projects, which suggests that a holistic approach to energy efficiency is not yet the standard in most countries. This underscores the need for continued awareness-raising efforts and policy-driven support to encourage more extensive, energy-efficient renovations across the region.

3.4.2. Economic Indicators Affecting Renovation Market

In addition to available subsidies and public awareness and other factors, economic conditions play a crucial role in shaping the renovation market. Significant economic shifts can create uncertainty, influencing homeowners' willingness and ability to invest in renovations. The following analysis, based on Eurostat data, examines key economic factors impacting renovation trends.

Labour costs and wages have increased in all project countries, though notable differences persist between them. Figure 1 illustrates the variations in labour costs across the region.

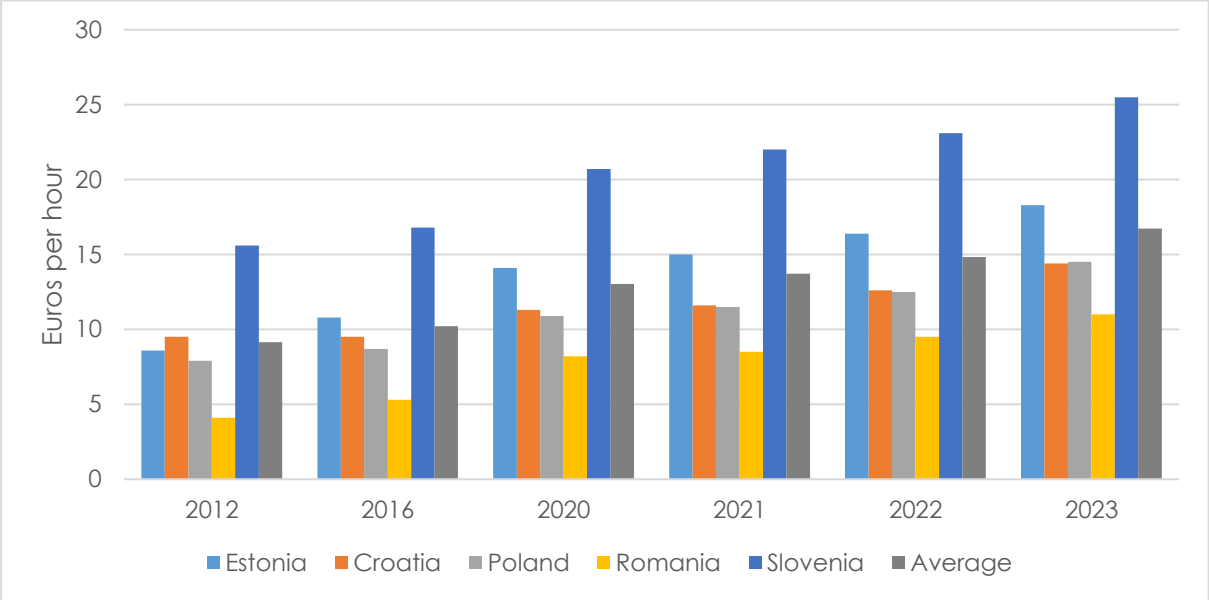

Figure 1 Hourly labour costs (NACE Rev 2 Sections B to S)[1]

To compare economic developments in the project countries, the table below summarizes changes in consumer prices, construction costs, and labour costs between 2020 and 2023.

Table 6 Comparing labour and construction costs and consumer prices 2023 indicators with 2020 indicators (2020 = 1,00)

Indicator	Romania	Croatia	Poland	Estonia	Slovenia	Average
Consumer prices[2]	1,36	1,23	1,32	1,28	1,20	1,28
Construction producer prices (new residential building)[3]	1,45	1,40	1,30	1,36	1,36	1,37
Hourly labour costs[1]	1,30	1,27	1,33	1,34	1,23	1,28

[1] Eurostat. (n.d.). Hourly labour costs (NACE Rev 2 Sections B to S). Retrieved [January 24, 2025], from https://doi.org/10.2908/LC_LCI_LEV
[2] Eurostat. (n.d.). HICP - annual data (average index and rate of change). Retrieved [February 6, 2025], from https://doi.org/10.2908/PRC_HICP_AIND
[3] Eurostat. (n.d.). Construction producer prices or costs, new residential buildings - annual data. Retrieved [February 6, 2025], from https://doi.org/10.2908/STS_COPI_A

Between 2020 and 2023, Romania, Croatia, Poland, Estonia, and Slovenia experienced significant increases in consumer prices, construction costs, and labour costs, according to Eurostat data. Among these, construction costs rose the fastest, particularly in Romania (45%) and Croatia (40%). Labour costs grew at a slower pace, with Estonia (34%) and Poland (33%) seeing the highest increases. Consumer prices also climbed sharply, led by Romania (36%) and Poland (32%). Since construction costs generally increased faster than wages, this suggests that material and operational expenses were the primary drivers of inflation in the sector. While rising wages could help homeowners finance renovations, the sharper increase in construction costs makes renovations increasingly expensive. Renovations often require significant investment, typically through loans. With EURIBOR rising sharply since 2021, borrowing costs have increased across the EU, impacting renovation financing conditions. The graph below illustrates these trends.

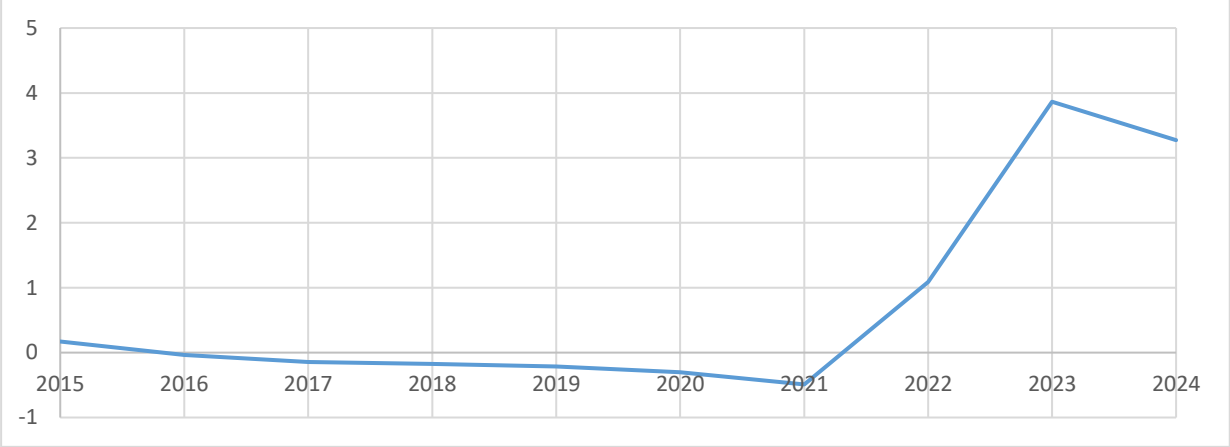

Figure 2 Average 12-month EURIBOR rate[4]

The sharp increase in the 12-month EURIBOR rate from negative values in 2021 (-0.491%) to over 3.86% in 2023 (peaking at 4.16% in November 2023) has substantially raised borrowing costs for homeowners. Between 2015 and 2021, EURIBOR remained near or below zero, making financing relatively affordable. However, the rapid rise in 2022 and 2023 has led to significantly higher interest rates on renovation loans, discouraging deep renovation projects—especially in regions where upfront investment costs were already a major barrier.

Although the rate slightly decreased to 2.44% by the end of 2024, borrowing remains considerably more expensive than during the low-interest period. This sustained increase in financing costs further complicates large-scale renovation efforts, emphasizing the need for alternative financing mechanisms and supportive policies to maintain renovation momentum in the region.

[4] Bank of Finland. (n.d.). Average 12-month EURIBOR rate. Retrieved [February 6, 2025], from https://www.suomenpankki.fi/en/statistics/data-and-charts/interest-rates/charts/korot_kuviot_en//euriborkorot_kk_chrt_en

4. Summary and Recommendations

The renovation sector in these five countries faces significant challenges and opportunities. Across all countries, grants and public funding play a critical role in motivating energy renovations, particularly for multiapartment buildings (MABs). The obstacles are found in human capital shortages, financial limitations, awareness gaps, and technological constraints. While grants and subsidies are available in all countries, other barriers persist, particularly regarding skilled labour availability, access to personal financing, and homeowners' understanding of renovation benefits. Addressing these issues through policy measures, training programs, and financial innovations is crucial to accelerating renovation efforts across the region.

The analysis of different country perspectives highlights both obstacles and motivating factors that shape homeowners' decisions to renovate. Financial constraints remain one of the most critical barriers, as many homeowners struggle to afford renovation costs upfront. While increasing grants and subsidies could facilitate more renovations, they alone are not sufficient. The key challenge is not just providing more funding but ensuring that available resources are used efficiently and targeted to maximize impact. Collaboration with banks to improve renovation loan conditions should be explored to enhance financial accessibility. Effective policy design, combining financial incentives with advisory support and streamlined administrative processes, can help overcome these barriers and increase renovation uptake.

To advance renovation efforts and achieve energy savings and greenhouse gas (GHG) emission reduction targets while improving living standards, it is essential to understand the needs of homeowners who must invest their own money in renovation projects and navigate the process themselves. The analysis examined the main motivators driving homeowners to renovate.

Financial factors, especially the availability of grants and potential savings on monthly living costs, remain the most significant incentives for homeowners to undertake renovations. While energy efficiency has consistently been one of the goals, homeowners in all countries do not recognize it as a motivator. Reason behind that may be that reduced energy consumption does not always translate into lower costs—especially in recent years, as inflation and rising EURIBOR rates have significantly increased overall expenses and financing costs. Another key motivator for homeowners is the urgency of addressing severe and potentially hazardous building issues, such as failing electrical, water, heating, and sewage systems, as well as critical structural problems, including deteriorating roofs, balconies, and load-bearing walls.

However, it is important to note that indoor climate issues—such as inadequate ventilation, humidity problems, mould, and temperature extremes—are generally not recognized by homeowners as key motivators for renovation. These problems likely exist in many buildings, but homeowners often fail to identify them or fully understand their impact on health and comfort. Similarly, the broader goal of reducing GHG emissions, which is central to EU and national policies, is not a primary driver for individual homeowners. Raising awareness in these areas is essential to ensure that homeowners recognize these issues, understand their consequences, and take appropriate measures to address them.

Barriers to Renovation

While looking at barriers alongside motivators, the biggest barrier, as observed in every project country, is financial-related—the availability of renovation grants. It was mentioned that for various reasons such as small grant amounts and the high demand, leading to missed opportunities for support and quick exhaustion of funding, irregularity and unpredictability of grant programmes. Other challenges included a general lack of awareness about renovation and its benefits, as well as insufficient funds among homeowners to carry out renovation activities, including initiating the process. The shortage of innovative financial solutions also hindered progress, as these could be more flexible and better suited to overcoming financial barriers for homeowners or addressing other financial obstacles.

The issue of human capital barriers was also examined. One of the biggest obstacles across most project countries (except Estonia) is the shortage of skilled workers in the renovation sector. In Estonia, Poland, and Croatia, additional challenges include the limited availability of construction companies and the lack of designers specializing in different technical aspects of renovation. Addressing these labour shortages, alongside financial and technical constraints, is crucial to accelerating renovation efforts and ensuring that homeowners can successfully carry out necessary improvements.

Recommendations

Based on the insights gathered, several key recommendations can be made to improve the renovation process and address the barriers faced by homeowners. The following actions are crucial to making renovation initiatives more effective and inclusive, ultimately improving living conditions for households.

1. **Communication and Awareness of Renovation Benefits and Possibilities**
   - Raise awareness about available grants and renovation benefits.
   - Helping homeowners understand their building's true condition and renovation needs.
   - Encourage early intervention to avoid costly repairs later.

Effective communication and awareness-raising about the benefits and possibilities of building renovation are crucial. While various grant schemes and financing mechanisms exist, many homeowners are either unaware of them or face bureaucratic hurdles in the application process. Additionally, homeowners may lack a clear understanding of their building's true condition and needs. In some cases, they may either underestimate or overestimate the necessary work. If the issues are not addressed early on, the building's condition can worsen, ultimately making renovation more expensive. On the other hand, if homeowners are overly concerned about potential costs, they may fail to realise that carefully selected interventions can improve both the building's condition and the health and well-being of its occupants, often at a manageable cost, especially when prioritizing necessary renovations early, which can prevent more expensive repairs later.

2. **Technical Support and Capacity Building for Renovation**
   - Improve technical guidance for renovation projects, especially for energy-poor households.
   - Establish One-Stop Shop (OSS)-type services to support homeowners throughout the process.
   - Enhance the skills of workers, technical experts, and public sector employees managing renovations.
   - Provide training and guidelines to homeowners and building managers to improve renovation outcomes.

In addition to grant schemes, technical support for renovation projects should be improved. Many households lack the expertise or confidence to undertake renovation work, making technical guidance essential. One-Stop Shop (OSS)-type services could help overcome these barriers, particularly for energy-poor and vulnerable households. These services would offer targeted support, assisting homeowners throughout the renovation process and helping them access funding.

Addressing the shortage of workers on construction sites is challenging, but the skills of both workers and technical experts need to be enhanced. In cases where the administrative burden and lack of staff make managing renovation projects particularly difficult for public entities, awareness and skills can also be raised. However, as identified in some countries, local public officers often struggle with managing a large volume of renovation projects, highlighting the need for additional administrative capacity. Public sector training can ensure better handling of renovation processes and support for homeowners and tenants.

Moreover, the development of knowledge among homeowners and building managers can be achieved through targeted training and capacity-building initiatives. Providing clear guidelines and technical requirements, alongside practical training on renovation processes and best practices, would further empower stakeholders and improve renovation outcomes.

3. **Financing Solutions for Renovation: Ensuring Accessibility and Flexibility**
   - Ensure regular and transparent grant calls for better renovation planning.
   - Implement step-by-step renovation approaches with clear objectives for each phase.
   - Develop flexible financing options, such as green loans, with longer repayment periods.
   - Collaborate with banks to improve loan conditions and ensure they are more accessible.
   - Tailor financial support to meet diverse household needs, including for low-value properties.

Long-term improvements in financing mechanisms are crucial to ensure stability and predictability in renovation efforts. Many countries have highlighted the importance of regular and transparent grant calls to help homeowners and renovation sector to plan renovations more effectively. Establishing predictable schedules for grant calls is essential, as it allows better preparation for renovation activities and contributes to more effective workforce planning, potentially mitigating some workforce-related challenges.

To overcome financial barriers, some countries have proposed step-by-step renovation approaches, allowing households to gradually progress with the help of financial support. However, it is important that each phase of the renovation has a clear aim, ensuring that the outcome is understood from the start, to avoid locking out future improvements. Others have suggested flexible financing models, including so-called green loans for deep renovations to achieve energy efficiency or for local renewable energy production systems (in the case of MABs, usually PV plants) with longer repayment periods, making renovations more affordable in the long term. While loans are typically provided by private banks, efforts should be made to collaborate with banks to improve loan conditions and offer more accessible terms.

Additionally, financial support, grant options, and loan options should be tailored to meet diverse household needs. Perhaps there is a need to find ways to guarantee loans in areas with low property values. This can be achieved not only through grants and guarantee mechanisms, but also by working with banks to enhance loan conditions for renovations. Exploring partnerships with financial institutions could help ensure that renovation loans are more accessible and better suited to homeowners' financial situations.

ANNEXES

- ANNEX 1 Questionnaire to collect input for CEESEN-BENDER task 3.2 - analysis of market, technical, and other barriers.

Questionnaire to collect input for CEESEN-BENDER task 3.2 - analysis of market, technical, and other barriers.

GENERAL INFORMATION:

1. Country:*

2. Contact e-mail:*

i - Please add e-mail of person answering to be possible to communicate with right person directly if there is any need to clarify/discuss answers given.

BRIEFLY ON ENERGY POVERTY

3. Is energy poverty defined in your country?*

Yes / No/ Can't choose either - will explain/ Can't answer

3.1. Explain if needed

Open text

4. Please try to answer are the energy poor households spread out or concentrated somewhere and whether and what are the factors that unite energy-poor households (e.g., building types, age of the building, energy supply or geographical location etc)?*

Open text

RENOVATION MARKET

5. Is renovating multiapartment buildings (MABs) generally popular in your country (awareness is quite high and many multiapartment buildings (MABs) consider renovation as needed activity soon)?*

Yes/No/ Can't choose either - will explain / Can't answer

5.1. Explain if needed

6. How do you estimate MABs renovation pace change in the last 2-3 years (more or less MAB renovations)?*

More/Less/Same level / Can't answer

6.1. Please explain shortly your selection*

7. Please try to estimate is receiving bank loans to cover renovation costs problematic for MABs (real-estate value, MABs solvency)?*

Yes/No/ Can't choose either - will explain/ Can't answer

7.1. Explain if needed

8.Please try to estimate has it become more difficult to receive a loan for renovations in the last 2-3 years?*

Yes/No/ Can't choose either - will explain / Can't answer

8.1. Please explain shortly your selection *

i - Explain/comment - are bank loan conditions changed (stricter) or is the economic situation of households changed etc

9. Are you aware of any specific "green loans" for renovation and energy performance of MAB with better conditions?

Yes/No/ Can't choose either - will explain / Can't answer

9.1. Explain if needed

RENOVATION MODEL

10. Can you say that you have definition of deep renovation or there is widely known mutual understanding of deep renovation in your country? *

Yes/No/Can't choose either - will explain / Can't answer

10.1. Explain if needed

i - There different definitions, but you can describe yours (if needed please do it in 10.1) and stick on that if answering following questions. In general it can be defined as follows: Deep renovation involves the use of multiple energy-saving measures to achieve energy savings of 60%–90% (BPIE, 2011; European Commission, 2019/786).

11. Please try to estimate is in general in your country more common to renovate partly (partial renovation) or do deep renovation?*

Partial/Deep renovation/Equally applied / Can't answer

i - In partial renovation just one or few typically connected interventions are done (e.g., just roofing, just roof/attic insulation, roofing with roof/attic insulation etc.)

12. Select most typical deep renovation interventions in your country (try to pick all that are most typically done):*
roofing replacement
roof/attic insulation
arranging the building walls
insulating the building walls
arranging the foundation of the building
insulting the foundation of the building
replacing windows
replacing exterior doors
renewal of the heating system
construction/renovation of the ventilation system
upgrading the electrical system
renewal of sewerage
renewal of the water supply system
installing solar panels
control and energy management systems
other(s):

12.1. Please, mark estimated renovation cost range in €/m2 (for most typical renovation case):.

12.2. Are post-renovation monthly payments (including loan payment) for households decreasing after renovation?
Yes / Yes, but only with grant / No, they are increasing a bit/ No, they are increasing a lot / Don't know

13. Select most typical partly renovation interventions in your country (try to pick not more than 5 interventions):
roofing replacement
roof/attic insulation
arranging the building walls
insulating the building walls
insulating and arranging end walls of the building
arranging the foundation of the building
insulting the foundation of the building
replacing windows
replacing exterior doors
renewal of the heating system
construction/renovation of the ventilation system
upgrading the electrical system
renewal of sewerage
renewal of the water supply system
installing solar panels
other(s):

13.1. Please comment and also try to describe intervention(s) effect on monthly payments (including loan payment) for households as in previous question.
Open text

14. Provide your current estimation what will be most suitable renovation (model) for your pilot area buildings? *
Open text
i - If you can, also please describe you most realistic renovation plans/innervations with your pilot buildings.

RENOVATION GRANTS

In next question we are asking you to describe your renovation grants. It is preferred to fill in table with up to three grants. If for some reason you could not do or you need to add more, please go directly to 15.1 (free text box) and provide your input in 15.1.

15. Please describe renovation grants (eligible expenses (works), is it for deep renovation, subsidy rate, max amount per applicant (MAB) in €)

	Name of Grant	For deep renovation (YES/NO)	Subsidy rate (%)	Max amount per applicant (€)
1				
2				
3				

15.1. Explain/ describe renovation grants (eligible expenses (works), is it for deep renovation, subsidy rate, max amount per applicant (MAB) in €)€)

Open text

16. Is there any renovation grant specifically aimed for vulnerable/poor households or are there in framework of current schemes some extra support/benefit for vulnerable/households if it is renovation in MAB with mixed (energy-poor and non-energy-poor households)?*

Yes/No / I am not aware

17. Your current estimation what will be most suitable grant for your pilot area pilot buildings?*

Open text

RENOVATION REASONS-MOTIVATION

18. What are the main motivations for MABs renovate or consider renovation?*

availability of grants
reducing living (monthly) costs
energy savings
greenhouse gas emissions reduction
poor and failing systems (e.g., electrical, water, heating, sewage)
poor and dangerous structural condition (e.g., roof, balconies, bearing walls)
aesthetics of the building
indoor climate problems (e.g, ventilation/humidity/mould, hot/cold)
poor living conditions that are not corresponding to today's norms/ expectations
real estate value
other

18.1. Explain if needed

Open text

RENOVATION CHALLENGES/BARRIERS

19. Evaluate the following barriers on human capital in renovation process - What is missing the most in the renovation market to accelerate renovations?

designers
designers of special parts
construction companies performing renovations.
skilled workers (at renovation site)
consultant
supervisor
other

20. Evaluate the following barriers - What is missing the most in the renovation market to accelerate renovations?

General awareness of renovation
Renovation support systems
Renovation grants availability
Renovation grants conditions
Loans availability (e.g., banks not giving loans for renovation)
Lack of funds from owners/occupants
Good examples
Technology availability
Innovative technological solutions
Innovative financial solutions
Other

21. Considering previous (options) what is most needed to accelerate renovation in poor households?

Open text

- ANNEX 2 – Croatia's report on building renovation technical and economic barriers, provided separately
- ANNEX 3 – Estonia's report on building renovation technical and economic barriers, provided separately
- ANNEX 4 – Poland's report on building renovation technical and economic barriers, provided separately
- ANNEX 5 – Romania's report on building renovation technical and economic barriers, provided separately
- ANNEX 6 – Slovenia's report on building renovation technical and economic barriers, provided separately

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