Grant Agreement number: 101120994 — LIFE22-CET-CEESEN-BENDER — LIFE-2022-CET

CENTRAL & EASTERN EUROPEAN SUSTAINABLE ENERGY NETWORK · CEESEN-BENDER

CEESEN-BENDER

Building intErventions in vulNerable Districts against Energy poveRty

Deliverable 3.1

Report on building renovation barriers in regulatory framework in Croatia

Dissemination Level: Public

WP3 Tackling the barriers hindering building related interventions in vulnerable districts

DOOR 2025

Co-funded by the European Union

CENTRAL & EASTERN EUROPEAN SUSTAINABLE ENERGY NETWORK · CEESEN-BENDER

Versioning and Contribution History

Version	Date	Modified by	Modification reason
v. 01	15.07.2024.	Tomislav Cik, Matija Eppert	Creation
v. 02	23.07.2024.	Miljenka Kuhar	Edits and Revision
v. 03	28.10.2024.	Tomislav Cik	Final version

Website: https://ceesen.org/en/about-ceesen/ceesen-bender/

SUGGESTED CITATION

Cik, T., Eppert, M., Kuhar, M. (2025). Report on building renovation barriers in regulatory framework in Croatia. Society for Sustainable Development Design (DOOR), HR: CEESEN-BENDER Project. Retrieved from www.ceesen.org

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1. Background of the CEESEN-BENDER project

The main goal of "Building intErventions in vulNerable Districts against Energy poveRty" (i.e. CEESEN-BENDER) project, launched on September 1, 2023, is to empower and support vulnerable homeowners and renters living in Soviet-era multi apartment buildings 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 CEESEN-BENDER project brings together leading European researchers and experts in the 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 (Mazovian Energy Agency / MAE, Housing Cooperative "Marysin Wawerski" / SM Marysin Waw), Germany (Climate Alliance) in addition to Central Eastern European Sustainable Energy Network (CEESEN).

The CEESEN-BENDER project 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. The project is being carried out by internationally recognized researchers and partners from Society for Sustainable Development Design, University of Tartu, Local Energy Agency Spodnje Podravje, Alba Local Energy Agency, Climate Alliance, Medjimurje Energy Agency Ltd., Mazovian Energy Agency, Tartu Regional Energy Agency, Municipality of Alba Iulia, Central Eastern European Sustainable Energy Network. In addition, associated partners of the project include Housing Cooperative "Marysin Wawerski", EUROLAND Ltd., GP STANORAD Ltd. and The Estonian Union of Co-operative Housing Associations.

2. Relevance of this deliverable

This policy brief summarises the results of the analysis of relevant national regulations regarding the building renovations related to the energy poor households in Croatia. This analysis of Croatian regulatory and policy frameworks regarding the renovation of multiapartment buildings (in further text: MAB) is a crucial step among many needed to enhance energy efficiency of Croatia's building stock and alleviate energy poverty in the country. By critically studying the content and achievements of national policies and regulatory measures, this analysis provides insights into how Croatia can better align with broader EU goals and enhance its contribution to reducing energy consumption and greenhouse gas emissions in the residential building sector. Given that a significant portion of the residential sector in Croatia is made up of MABs, improving their energy performance is essential in contributing to the achievement of EU energy efficiency targets. This policy brief aims to highlight the successes and shortcomings of existing policies and regulations, offering guidance for future legislative, policy and financial efforts to ensure renovations in Croatia are both widespread and impactful.

Considerations stemming from such evidence-based recommendations are vital for addressing the specific challenges of energy renovations and energy poverty in Croatia. The findings of the analysis were the basis of specific policy recommendations for policy actors and relevant decision-makers in Croatia to improve future programs, policies, and legislation, ensuring efficient and targeted resource allocation and priority setting. Moreover, while improving energy performance in MABs can reduce overall energy consumption and emissions, it also significantly enhances living conditions for a large segment of the population. Addressing energy poverty in these buildings supports social equity in the country and improves the quality of life for vulnerable households, contributing to Croatia's social and economic resilience.

CEESEN-BENDER partners identified the following barriers to energy renovations of MABs and the consequential energy poverty alleviation in MABs in Croatia.

Summary of **REGULATORY AND POLICY BARRIERS:**

- Outdated and incomplete data of the building stock
- Transparency issues in baseline analysis of specialised programmes
- No specific targets (and programmes) for energy poverty on a nationally representative level
- Financial gaps in the deep renovation model
- Insufficient data on energy poverty
- Lack of public engagement and educational activities
- Limited scope and accessibility of SMiV system
- Financial gaps and need for new instruments
- Lack of just transition and social inclusion principles

Summary of **BARRIERS RELATED TO PUBLIC CALLS FOR ENERGY RENOVATIONS OF MABS:**

- Fluctuating application and approval rates
- Complexity of administrative procedures and limited project management capacities
- Lack of focus on energy-poor households
- Variable co-financing rates
- Lack of performance-based incentives

Based on these barriers, CEESEN-BENDER partners identified the following **policy recommendations** for greater energy renovations and energy poverty alleviation in MABs in Croatia:

1. Establish a comprehensive data collection system to accurately define and assess energy poverty at national, regional, and local levels;

2. Improve existing monitoring mechanisms, like the SMiV or ISGE systems, by ensuring comprehensive tracking of energy renovations of residential MABs and reporting of energy poverty indicators in MABs;
3. Enhance legislative support for RES systems in MABs and citizen energy communities within MABs to facilitate energy renovations and democratize energy production;
4. Develop and implement widescale national awareness raising campaigns to stimulate public discussion and participation in energy renovations of MABs, particularly targeting vulnerable co-owners and neighbourhoods;
5. Extend application deadlines to allow more time for potential applicants, especially those from marginalized or hard-to-reach communities and energy poor citizens, to apply to public calls for energy renovations of MABs;
6. Conduct regular reviews of energy renovation programs to assess their impact and identify areas for improvement.

3. Introduction

Globally, buildings account for a significant portion of energy consumption and greenhouse gas (GHG) emissions, making their renovation a critical component in the transition to a low-carbon economy. According to the Intergovernmental Panel on Climate Change, in 2019, the building sector accounted for 12 GtCO2-eq of greenhouse gas emissions, representing 21% of global emissions. These emissions comprised 57% from indirect CO2 sources like electricity generation, 24% from direct on-site CO2 emissions, and 18% from cement and steel production for building construction. Considering only CO2 emissions, buildings contributed 31% globally. Energy use in buildings, with residential and non-residential sectors contributing 70% and 32% respectively to global final energy demand, highlighted a significant increase in global CO2 emissions and energy demand from 1990 to 2019, particularly in electricity, which rose by 161%.[1]

In the context of GHG emissions reduction, the EU has set binding targets under the Climate Target Plan 2030 and the Fit for 55 package. The aim is to reduce GHG emissions by at least 55% by 2030 compared to 1990 levels. Buildings are responsible for approximately 40% of the EU's energy consumption and 36% of its GHG emissions, and according to 2020 data, a staggering 75% of the total housing stock, of which over a third (35%) was built before 1970, is classified as energy inefficient.[2] Thus, energy renovations[3] of multi apartment buildings (MABs) are central to achieving the EU's energy efficiency targets, addressing energy poverty, and contributing to the broader climate change mitigation and adaptation efforts. Official EU strategies and documents, such as the Renovation Wave strategy, the Climate Target Plan, and the

[1] IPCC, Chapter 9: Buildings, accessed 10.07.2024, https://www.ipcc.ch/report/ar6/wg3/chapter/chapter-9/

[2] *European Commission – Department: Energy – In focus*, accessed 10.7.2024., https://commission.europa.eu/document/download/65660913-cecb-4f2f-b34c-c9bbf9bed1af_en?filename=in_focus_energy_efficiency_in_buildings_en.pdf

[3] Energy renovation of a building involves various technical operations and processes aimed at enhancing the building's energy efficiency. This includes conducting an energy audit and obtaining an energy certificate, creating project documentation to demonstrate energy savings, improving thermal insulation of external parts like walls and roofs, and replacing external joinery. It also involves upgrading technical systems, such as heating, cooling, ventilation, air conditioning, hot water preparation, and lighting systems. Additionally, the process may include integrating renewable energy sources, such as solar panels and heat pumps.

Fit for 55 package, outline the pathways and targets for building renovations and their role in the EU's climate and energy policies.

Renovating existing buildings could reduce overall energy consumption in the EU by 5-6% and lead to a decrease in carbon dioxide emissions by approximately 5%. Despite this potential, the average annual renovation rate of the EU building stock is less than 1%, with member states' renovation rates ranging from 0.4% to 1.2%. Furthermore, households or the residential sector accounted for 27% of final energy consumption in the EU in 2021, which is 18.6% of the EU's gross inland energy consumption. The EU's Renovation Wave strategy, part of the European Green Deal, aims to at least double the annual energy renovation rate of residential and non-residential buildings by 2030. This initiative targets the renovation of 35 million buildings over the next decade, with a particular focus on improving the energy performance of MABs where energy poverty is often pronounced. Energy poverty affects millions of EU citizens, leading to inadequate heating, cooling, and overall poor living conditions. Countries of Central and Eastern Europe (CEE) face unique challenges in this regard, including older building stock, lower energy performance, and higher rates of energy poverty.

In Croatia, multi apartment buildings[4] (MABs) constitute about 35% of the total housing stock and approximately 27% of the total number of buildings, based on the usable area of heated sections. Around 57% of MABs are in continental Croatia, and nearly 58% were built before 1981, prior to the introduction of energy consumption standards for buildings. Buildings constructed before 1981 use 200-250 kWh/m² of thermal energy for heating. Implementing energy efficiency measures can reduce this consumption to 50 kWh/m². Available data also indicates that 83% of buildings do not meet the 1987 Technical Regulations and suffer from significant heat loss. As a result, MABs are among the buildings with the poorest energy performance. Furthermore, almost 37% of all owner-occupied dwellings were built before 1961, and around 58% were built before 1971. In continental Croatia, 34% of MABs have energy properties rated D or worse, compared to 9.36% in coastal Croatia. However, over 20.52% of MABs in coastal Croatia have energy properties rated C.[5]

4. Methodology

The purpose of this policy brief is to provide evidence-based guidelines that support a more targeted and widescale energy renovations of MABs in the national context while simultaneously addressing issues of energy poverty of households. This is to be achieved through greater understanding of existing regulatory and policy barriers concerning these overarching goals. Evidence-based policy recommendations based on such an analysis can aid decision makers in future improvements of regulatory frameworks and support building related interventions in vulnerable districts. Thus, **the aim of this analysis is to identify and analyse relevant national regulations regarding the building renovations related to the energy poor households in pilot countries**. This policy brief will aid in the assessment of such barriers in the wider context of the CEESEN-BENDER

[4] A multi-apartment building is any building that is entirely or in which more than 66% of the usable area is intended for housing and has three or more residential units, and which is managed by the building manager, who is a legal or natural person, in accordance with Article 378 of the Act on Ownership and Other Real Rights (Official Gazette, no. 91/96, 68/98, 137/99, 22/00, 73/00, 129/00, 114/01, 79/06, 141/06, 146/08 , 38/09, 153/09, 143/12, 152/14, 81/15 and 94/17 - correction) and Article 4 (Item 72) of the Act on Energy Efficiency (Official Gazette, No. 127/14, 116/18, 25/20, 32/21 and 41/21).

[5] As per the *Programme of energy renovation of multi-apartment buildings for the period by 2030*, pg.7, pg.22

project, on the national level, and in the context of CEE countries through a synthesized CEE report by providing a comparative outlook between pilot countries.

To understand said regulatory and policy barriers the CEESEN-BENDER project partners identified publicly available national documents (strategies, policies, laws, statues of cooperatives, etc.) which are most relevant for defining the existing policy and regulatory framework of energy renovations of MABs and energy poverty alleviation in MABs within their country. Also, previous public calls related to energy renovations of MABs in each country were also identified, along with the conditions, results, and other key aspects of these public calls contained in separate documentation that was publicly available. The content of these documents was analysed by the project partners through three separate research instruments developed and shared by the TL, along with the instructions on how to utilise said instruments for data collection. Concerning the policy and regulatory framework analysis, two instruments were developed, while one instrument was developed exclusively for the purpose of collecting data referring to the aforementioned public calls for renovations of MABs.

The first out of the two instruments regarding policy and regulatory barriers included a total of 27 questions. Specifically, it contained 14 close-ended questions with predetermined multiple-choice answers defined by the TL, and 13 open-ended questions where the researcher had to provide a list in the form of bullet-points or had to input a specific numeric or qualitative value. The questions were structured into the following four segments: General information; Energy renovations of MABs; Energy poverty in MABs; Citizen's energy in MABs. This instrument, collecting more basic and descriptive information was supplemented with an instrument containing a total of ten questions and additional sub question grouped into three distinct segments of said barriers and which can most broadly be defined as: Targets; Measures; and Implementation & Monitoring. This second phase of the analysis has been conducted by collecting data in the form of written answers to questions provided by the TL and represented broader reflections on the findings in the first phase and their synthesis with previous understandings and experience of the researcher regarding the energy renovation of MABs and energy poverty alleviation in MABs. This resulted in qualitative data grouped into topics relevant for identifying legislative and policy barriers on a national level.

5. Regulatory and policy barriers to energy renovations of MABs in Croatia

This policy and regulatory framework analysis covered a total of ten official publicly available documents that were deemed as more or less relevant for defining the current national regulatory and policy framework for energy renovations of MABs in Croatia and energy poverty alleviation in MABs in Croatia. Some general information gathered within this first step of the analysis sheds light on the recency of these legislations and policies, as well as their status, overall summations of their primary and secondary subject areas, and key stakeholders of the policy or regulation which are explicitly mentioned within the document itself or indirectly referred to. Table 1. brings an overview of these documents with the previously mentioned general information and a hyperlink to each of the analysed documents. This data collection was conducted in the period from February 6th until April 15th, 2024. The research instruments can be found in annex 1, annex 2, and annex 3, respectively.

Table 1. **General information** on the analysed documents outlining Croatia's regulatory and policy framework for energy renovations of MABs.

Legislation/policy	*Year of publication	Subject area (Primary & secondary)	Source	Version(s)	Key stakeholders
Act on Energy Efficiency[6]	2014; 2018; 2020; 2021	Energy	Official Gazette, 127/14, 116/18, 25/20, 41/21	Final	Energy market actors
Act on Energy	2012; 2014; 2015; 2018	Energy	Official Gazette, 120/12, 14/14, 102/15, 68/18	Final	Energy activities actors
Act on Renewable Energy Sources and High-Efficiency Cogeneration	2021; 2023	Energy & Renewable energy sources	Official Gazette, 138/21, 83/23	Final	Producers and consumers of energy
Act on the Electricity Market	2021; 2023	Energy	Official Gazette, 111/21, 83/23	Final	Energy market actors
Act on Ownership and Other Real Rights	2015; 2017	Ownership	Official Gazette, 81/15, 94/17	Final	Physical and legal entities
Act on Cooperatives	2011; 2013; 2014; 2018; 2019	Ownership	Official Gazette, 34/11, 125/13, 76/14, 114/18, 98/19	Final	Cooperatives
Long-term Renovation Strategy of the National Building Stock by 2050	2020	Buildings & Energy renovation	Ministry of Physical Planning, Construction and State Assets	Final	Users of residential and non-residential buildings
Programme to combat energy poverty, including the use of renewable energy sources in residential buildings in assisted areas and in areas of special state concern for the period by 2025	2021	Energy poverty & Buildings	Ministry of Physical Planning, Construction and State Asset	Final	Residents of 387 state-owned buildings in regions with a status of subsidized areas and areas of special state care who are unable to participate in the financing of necessary repairs, and especially in energy renovation
Programme of energy renovation of multi-apartment buildings for the period by 2030	2021	Buildings & Energy renovation	Ministry of Physical Planning, Construction and	Final	Users of MABs (building managers; citizens, co-owners in MABs (un)damaged in the earthquake; socially vulnerable groups of

[6] On 24 April 2021 the Act on Amending and Supplementing the Energy Efficiency Act (Official Gazette 41/21) entered into force. The most significant change is that decisions regarding energy performance contracts and energy efficiency renovations for apartment buildings now require a majority based on co-ownership shares alone, rather than both co-ownership shares and the number of co-owners, resolving previous ambiguities and constitutional issues.

			State Asset		citizens, i.e. citizens in risk of energy poverty)
Act on Construction	2013; 2017; 2019	Construction & Buildings	Official Gazette 153/13, 20/17, 39/19	Final	Construction market actors (construction workers: person authorized for energy certification; building owners; investors)

*Subsequent years in the "Year of publication" column refer to years when amendments and supplements of the original act entered into force.

It can be noticed that six out of the total eleven documents were published close or within the current decade, which is important if these documents are to define the regulatory and policy framework for energy renovations of MABs in line with the more recent ambitions and considerations on the EU level. It is noticeable that more recent legislation and policies are more closely dealing with energy renovations of MABs than older legislation, dealing more with general issues of energy and construction. Finally, a wide range of stakeholders were recognized, ranging from various (energy and construction) market actors, energy cooperatives and their members to the users of MABs, indicating a sufficiently broad scope of actors, including vulnerable groups. This is especially important considering the widescale societal impacts of energy renovations of MABs on the national level and within communities in which such interventions take place.

In Table 2. the collected data is displayed concerning various aspects of energy renovations of MABs regarding the analysed legislative and strategic framework. Specifically, the results bring an overview of defined **quantitative targets**, renovation **measures** and **financial sources** for the implementation of such measures defined in the analysed documents. Additionally, the analysis ascribed a self-assessed relevance ranking concerning each reviewed document so that the displayed results could be put into a wider legislative and policy context and their (lack of) legislative or policy impact on that specific aspect evaluated accordingly. The table brings a summation of identified targets in their corresponding units, measures to achieve those goals, financial resources needed to achieve them and sources of such financing. While the two programmes and one strategy relevant for energy renovations of MABs in Croatia provide said targets, measures and financial data, out of all legislation analysed only the Act on Energy Efficiency explicitly defines them. Moreover, regarding the two identified programs, there is a clear connection between the identified targets, measures, financial scope for their implementation and sources of finances. Such is not the case with the Long-term Renovation Strategy of the National Building Stock by 2050 (in further text: Long-term renovation strategy - LTRS), which does not define the source of funding for integral energy renovations, as visible in Table 2. The documents assessed with (current) low impact to the energy renovations are excluded from Table 2.

Table 2. Overview of quantitative targets, measures, financial scope, and sources of financing of measures concerning **energy renovation of MABs in Croatia** within the analysed documents.

Legislation/policy	Targets (unit)	Measures	Financial scope (EUR)	Financial source	Impact
Act on Energy Efficiency	No	Energy inspection and energy certification of the building;	No	No	Medium

		Creation of project documentation for the energy renovation of the building, which proves energy savings; Increasing the thermal protection of the building envelope; Improving the technical systems of the building, which include technical equipment for heating, cooling, ventilation, air conditioning and the preparation of domestic hot water, the lighting system, the automation and management system of the building or its part, and the integration of renewable energy sources			
Act on Ownership and Other Real Rights	No	No	No	No	Medium
Long-term Renovation Strategy of the National Building Stock by 2050	42.395.923 (m2 of MABs to be renovated until 2050)	(financial) Programme of energy renovation of multi-apartment buildings for the period by 2021. To 2030.; Encouraging the integral renovations of MABs	844.117.061,52; NA;	Recovery and Resilience Facility & ESI funds & national and other sources; ESI & EFRR funds	High
Programme to combat energy poverty, including the use of renewable energy sources in residential buildings in assisted areas and in areas of special state concern for the period by 2025	26 (GWh of annual reduction of final energy consumption in energy poor households); 4.360 (MWh of total annual on-site electric energy production); 691 (tonnes of annual CO2 reduction)	(technical) ETICS system of external thermal insulation of the external facade based on MW with a thickness of 14 cm; Reconstruction of a 20 cm thick MW flat roof with new HI; Thermal insulation of a pitched roof; Replacement of windows with new PVC windows with Uw < 1.4 W/m2; Renovation of the roof structure; Replacement of roof structures; Cover replacement; Constructive rehabilitation of the building	19.908.421,26; 27.208.175,72	National Recovery and Resilience Plan; State budget	High
Programme of energy renovation of multi-apartment buildings for the period by 2030	6.300.000 (m2 of MABs to be renovated until 2030); 700.000 (m2 of average annual renovated surface of MABs); 3 (% of average annual renovation rate of MABs in the 10-year period 2020-2030); 518.16	(technical) Outer shell measures; Source of thermal energy for space heating and/or preparation of DHW - natural gas condensing boiler; Source of thermal energy for space heating and/or DHW preparation - pellet/chip boiler; Source of thermal/cooling energy for space heating/cooling and/or DHW preparation - air/air heat pump system with direct expansion of the working substance; Source of thermal/cooling energy for space heating/cooling and/or DHW preparation - air/air heat pump system; Source of thermal/cooling energy for space heating/cooling and/or DHW	2.282.832.304,73	National Recovery and Resilience Plan (62.711.526,97 EUR); ESI funds (NA); Social fund for Climate policy (NA)	High

	(GWh of savings in direct energy consumption until 2030); 658.66 (GWh of savings in primary energy consumption until 2030); 74.981,32 (tonnes of CO2 emissions reduction)	preparation - water/water heat pump system; Source of thermal/cooling energy for space heating/cooling and/or DHW preparation - ground/water heat pump system; Source of thermal energy for space heating and/or DHW preparation - remote heating system - central heating substation at the level of the building and parcels owned by the building; Source of thermal energy for space heating and/or DHW preparation - remote heating system - individual thermal substations for space heating and/or DHW preparation at apartment level; Source of cooling energy for cooling the building space – an air-cooled compression water cooler; Pipe distribution subsystem of the central heating system; Heating elements - fan convectors; heating bodies - radiators; Mechanical ventilation and air conditioning system - air conditioning chamber; mechanical ventilation and air conditioning system - duct distribution for air; DHW preparation system - DHW storage tank; Renewable energy sources - solar collectors for the preparation of DHW; Renewable energy sources - photovoltaic system; installation of electricity storage; Internal lighting system - common areas; building automation and management system; System for remote reading of energy and water consumption			
Act on Construction	No	No	No	No	Medium

All the identified policies and legislation were also analysed regarding measures, financial scope and sources of financing for energy poverty alleviation in MABs. Table 3. displays the collected data regarding these aspects. This step of the analysis shows a relatively wide range of financial and technical measures within the Long-term strategy, the Programme to combat energy poverty, including the use of renewable energy sources in residential buildings in assisted areas and in areas of special state concern for the period by 2025 (in further text: Programme to combat energy poverty) and the Programme of energy renovation of multi-apartment buildings for the period by 2030 (in further text: Programme of energy renovation of MABs). Only within the Programme to combat energy poverty is there a clear link between the identified measures, their financial scope and sources of financing, while the necessary funding of measures within the Programme of energy renovation of MABs is not explicitly stated. The two legislations relevant to energy poverty alleviation do not define any of these aspects. Again, the documents with self-assessed low relevance on the energy alleviation in MABs are excluded from Table 3.

Table 3. Overview of measures, financial scope and sources of financing of measures concerning **energy poverty alleviation in MABs in Croatia** within the analysed documents.

Legislation/policy	Measures	Financial scope (EUR)	Financial source	Impact
Act on the Electricity Market	No	No	No	Medium
Long-term Renovation Strategy of the National Building Stock by 2050	(financial) Programme of energy renovation of multi-apartment buildings for the period of 2021 to 2030; Programme to combat energy poverty, including the use of renewable energy sources in residential buildings in assisted areas and in areas of special state concern for the period by 2025	No	No	Medium
Programme to combat energy poverty, including the use of renewable energy sources in residential buildings in assisted areas and in areas of special state concern for the period by 2025	(technical) ETICS system of external thermal insulation of the external facade based on MW with a thickness of 14 cm; Reconstruction of a 20 cm thick MW flat roof with new HI; Thermal insulation of a pitched roof; Replacement of windows with new PVC windows with Uw < 1.4 W/m2; Renovation of the roof structure; Replacement of roof structures; Cover replacement; Constructive rehabilitation of the building	19.908.421,26; 27.208.175,72	National Recovery and Resilience Plan; State budget	High
Programme of energy renovation of multi-apartment buildings for the period by 2030	(financial) The establishment of a fund that will fully cover the costs for energy poor co-owners in MABs; Compensation of the costs of renovation of MABs up to 100% of eligible costs for energy poor residents	No	"Compensational" fund in the second three-year period	Medium

The last segment within this analysis phase refers to citizens' energy in MABs. Only three out of the total 11 documents analysed mention a citizen energy initiative in the context of MABs in any form (e.g. energy communities or RES communities). Table 4. Identifies these documents as well as the types of citizen energy initiatives mentioned.

Table 4. Overview of collected data on the type of **citizen-led energy initiatives in the context of MABs** referenced in the analysed documents.

Legislation/policy	Types of citizen-led energy initiatives referenced	Impact
Act on Renewable Energy Sources and High-Efficiency Cogeneration	Renewable energy communities; Consumers of their own renewable energy acting jointly; The user of a self-supply facility	High
Act on the Electricity Market	Citizens' energy community	High
Long-term Renovation Strategy of the National Building Stock by 2050	Citizens' energy community; Energy communities	Medium

The three following sub-sections represent the findings of the second phase of the analysis. Given the nature of the collected data, these findings are structured in a way that they narratively address the three pre-defined and presupposed areas of challenges concerning legislative and policy frameworks in the field of energy renovations of MABs and energy poverty alleviation in MABs on a national level. These sections also provide summaries and key takeaways of these broader reflections which highlight positive aspects as well as opportunities for improving the existing legislative and policy framework in Croatia regarding energy renovations of MABs and energy poverty alleviation in MABs.

5.1. Targets

Like the EU, almost half of Croatia's total energy consumption is dedicated to heating and cooling, with 80% of this occurring in buildings.[7] The EU Renovation wave aims to double the annual rate of energy renovation for both non-residential and residential buildings by 2030, promoting significant energy renovations that could reduce building energy consumption by at least 60%. In 2020, Croatia's national building stock comprised a total usable area of 237,315,397 m², with 178,592,460 m² in residential buildings and 58,722,937 m² in non-residential buildings. By 2050, 110,143,965 m² of residential buildings need renovation, including 42,395,923 m² (38.5%) of apartment buildings and 67,748,042 m² (61.5%) of family houses.[8]

In the short term and according to the LTRS (pg.79), the ambition is to increase the renovation rate of building renovation to 3% from the current 0.7% or 1.35 million m² per year. This strategy also projects an annual renovation rate increase of 0.5 percentage points from 2023, reaching 3.5% from 2031 to 2040 and 4% from 2041 to 2050. Progress in energy renovation in Croatia is tracked through measurable indicators, with renovation targets set at 30.84 million m² by 2030, 41.06 million m² from 2030 to 2040, and 32.10 million m² from 2040 to 2050.

According to the latest data, as per the national Programme of Energy Renovation of MABs, the current ambition of Croatia for the referenced ten-year period (2021-2030) is to increase the renovation rate of MABs to 3% annually and keep this rate of renovation of MABs until 2050, that is until full decarbonisation of the residential building stock in Croatia through energy renovations of MABs is achieved. Overall, as is evident in other key umbrella strategic documents, like Croatia's NECP, Low-carbon Development Strategy, and the National Energy Efficiency Action Plan for the Period from 2022 to 2024, the stated intent of full decarbonisation of the residential building stock is in line with other EU key directives and strategies aimed at this goal at the EU level. Also, considering Croatia's goal of 3% annual renovation rate until 2030 and considering that the projected data in the Programme of Energy Renovation of MABs sets the renovation rate in 2021 at 1%, Croatia exceeds the ambition of the EU's Renovation Wave strategy of at least doubling the renovation rate until 2030. Moreover, as the Renovation Wave strategy aims to foster deep renovation in the current Program, this is partially reflected through larger shares of co-financing of deep renovation projects in MABs (80%) compared to less comprehensive levels of renovations, like the integral energy renovation, currently co-financed by 60% in the Programme of energy renovation of

[7] Ministry of Physical Planning, Construction and State Assets, accessed 10.07.2024., https://mpgi.gov.hr/naslovna-blokovi-133/about-the-ministry-139/scope-of-the-ministry/energy-efficiency-in-the-buildings-sector/8640

[8] As per the LTRS, pg.13

MABs.[9] Finally, one of the three focus points of the Renovation Wave's strategy is to address energy poverty and worst performing buildings. In Croatia, this is recognized through a specific Programme to combat energy poverty.

Furthermore, all three key documents for the national planning of energy renovations of MABS, i.e. the two previously mentioned programs and the overarching Long-term strategy, include a necessary analysis of the referenced building stock. The data sources within these documents are, for the largest part, transparently indicated and well known. For example, the Long-term strategy transparently states the data sources used for subsequent calculations, which, in this case, and for the most part, are taken from other earlier documents regarding energy renovations, with additional data and assumptions being adjusted to reflect those found in the overarching NECP and Croatia's Low-carbon strategy. The fact that the Long-term strategy methodologically relies on earlier data is perhaps its greatest methodological shortcoming, as some of these documents' data are referencing relatively old periods (e.g. 2008-2016). The analysis in the Long-term strategy is comprehensive and covers an exhaustive typology of residential and non-residential buildings in the current national stock and considers relevant trends and other levels of statistical analysis regarding relevant parameters (e.g. national stock state and projections according to the period of construction, climate zones, ownership, area, etc.).

The statistic in the Programme of Energy Renovation of MABs is supplemented with additional data from various other sources (e.g. Census data from 2011 and statistical reports on construction for the period from 2010 – 2018) and offers a more focused analysis of the multiapartment (residential) building stock in Croatia. The main shortcoming of the analytical background of the Program is that it does not include statistical data from the 2021 Census. Lastly, the smallest scope of analysis is found in the Programme to combat energy poverty because of its specific focus on MABs in areas under special state care. This allowed for a more detailed analysis with primary research (e.g. surveys of 984 apartments through 397 buildings) by state officials, which offers good ground for a more tailored approach. The lack of availability of the conducted survey could be considered the greatest shortcoming regarding the transparency of the conducted research.

Within the analysed documents concerning the national planning for energy renovations of MABs in Croatia, two key documents are the Long-term strategy and the Programme of Energy Renovation of MABs. Both documents heavily emphasise and adopt the scenario of the most ambitious accelerated energy transition contained within the umbrella Low-carbon Development Strategy, which sets the target of annual energy renovation rate to 3% until 2030. As the Programme of Energy Renovation of MAB sets its focus on the medium term (until 2030), it is reasonable that certain

[9] As per the Programme of Energy Renovation of MABs (pg.5), there are three main categories of building renovations in Croatia. **Integral energy renovation** includes a combination of several energy renovation measures, and necessarily includes one or more measures on the building envelope that achieve a saving of the annual required thermal energy for heating (QH,nd) of at least 50% compared to the state before the renovation. Integral energy renovation can exceptionally include only one measure on the envelope if it results in a saving of the annual required thermal energy for heating (QH,nd) of at least 50% compared to the state before the renovation. **Deep renovation** includes energy efficiency measures on the envelope and technical systems and results in savings of the annual required thermal energy (QH,nd) and primary energy (Eprim) on an annual level of at least 50% compared to the state before the renovation. **Comprehensive renovation** - includes optimal measures to improve the existing state of the building and, in addition to energy renovation measures, includes measures such as: increasing safety in case of fire; measures to ensure healthy indoor climate conditions and; measures to improve the fulfillment of the basic requirement of mechanical resistance and stability of the building, especially to increase the seismic resistance of the building, and may also include other measures that improve the fulfillment of the basic requirements for the building.

additional targets for energy renovations of MABs set in measurable indicators with the Programme of Energy Renovation of MABs (e.g. m² of average annual renovated surface of MABs, GWh of savings in primary energy consumption, tonnes of CO2 emissions reduction, etc.) are not to be found within the Long-term strategy, which focuses on the period until 2050. However, the Programme of energy renovation of MABs explicitly states (pg. 33) that "All the target values presented here are in accordance with the Long-term strategy and serve to monitor the progress and continuity of the Program's implementation."

In this sense, the Long-term strategy itself contains calculations that express contribution of the building sector to the total expected CO2 emissions reduction until 2050, if the policies based on that strategy are to be implemented for 2030 and 2050. The results of these key calculations are consistent and are to be found within the Programme of energy renovation of MABs, which, in turn, offers a more detailed insights into its calculated contributions to fulfilling the national goals set by the Long-term strategy concerning various aspects of the widescale energy transition. Concerning energy poverty in MABs, the Programme of energy renovation of MABs addresses the issue but does not set specific targets because of lack of data concerning energy poverty, in general and in MABs. The key document within this analysis that addresses this issue is the Programme to combat energy poverty that targets specific MABs. As an alternative policy measure, this program also contributes to the total national cumulative goal of savings in immediate energy consumption, but it does not express direct contributions of defined measures to these targets numerically. However, it does include specific quantitative targets in corresponding units of measures defined within the program, and, in this sense, it can be regarded as consistent with the Long-term strategy and Programme of energy renovation of MABs.

Summary and identified barriers

The first area of potential legislative and policy barriers refers to targets for energy renovations of MABs and energy poverty alleviation in MABs on a national level. In this sense, it was important to determine whether the national targets are:

- Sufficiently **ambitious and prioritised** in the national planning for the energy transition;
- Based on **comprehensive data and appropriate methodologies** for the widescale baseline analysis and tracking of the national building stock and energy poverty on a national level;
- **Coherent** across the relevant legislation and policies **and compatible** with other targets relevant to the energy transition in the country.

Summary: With Croatia aiming to triple the annual renovation rate of MABs by 2030, fostering deep renovation through the allocation of larger budget MABs renovation, and with its Programme to combat energy poverty, Croatia displays sufficient political ambition and strategic focus on the key aspects of energy renovation of MABs at the national level, while recognizing that the needs of vulnerable households in renovations efforts need to be addressed. However, it remains to be seen whether the targets will be achieved, considering that the renovation for the period 2014-2020 was around 0,7%. Croatia's key national planning documents for energy renovations of MABs include comprehensive analyses of building stock using transparent data sources,

though the Long-term strategy relies on older data (2008-2016), and the Program for energy renovation of MABs lacks 2021 Census data.

The Programme to combat energy poverty provides detailed analysis through primary research but lacks transparency in survey availability. The programme itself targets buildings, not particular households, and the share of energy-poor households in targeted buildings is not clear. The Long-term strategy and the Programme of energy renovation of MABs in Croatia align on a 3% annual renovation rate until 2030, supporting the ambitious targets set by the Low-carbon Development Strategy. Both documents ensure consistency in national energy transition goals, with detailed medium-term targets in the Programme and broader CO2 reduction goals in the Long-term strategy. However, the Programme addresses energy poverty only nominally stating that specific measures for the renovation of energy poor households will be planned under a specific programme for the renovation of energy poor households, which will be adopted by 2024.

Identified barriers regarding the TARGETS for energy renovations and energy poverty alleviation in MABs:

1. **Outdated and incomplete data of the building stock**: The reliance on older data (2008-2016) in the Long-term Strategy and the lack of 2021 Census data in the Program for Energy Renovation of MABs may undermine the accuracy and effectiveness of renovation plans.

2. **Transparency issues in baseline analysis of specialised programmes**: The Programme to combat energy poverty lacks transparency regarding the availability of survey data, and it targets buildings rather than specific households, leaving the share of energy-poor households unclear.

3. **No specific targets (and programmes) for energy poverty on a nationally representative level**: The Program for Energy Renovation of MABs addresses energy poverty only nominally, deferring specific measures for the renovation of energy-poor households to a separate programme planned for adoption by 2024.

5.2. Measures

Concerning the energy renovations of MABs, the analysed regulations and programs recognize a wide array of primarily technical and financial measures. These measures are recognized within the above-described Long-term strategy and Programme of energy renovation of MABs, with the Program providing the most extensive available list of technical measures that pertain to specific areas of construction and/or improvement of the building. Moreover, the Act on Energy Efficiency also provides a list of technical measures that is not extensive nor as detailed. Financial measures are also foreseen by the Long-term strategy, and, in fact, the Programme of energy renovation of MABs is one of the proposed financial measures of the Long-term strategy, along with the financial measure of encouraging the integral renovation of MABs. Additionally, based on the reviewed documents, it could be concluded that there are notable gaps in financial measures in relation to the overall financial cost of the deep renovation of MABs (in the medium or long term) when considering just how many of these measures are foreseen. Exemption from this is the Programme of energy renovation of MABs.

The comments on the draft of the Programme of Energy Renovation of MABs and Long-term strategy, one of the mechanisms that could ensure the inclusiveness of the process of defining the measures, are deemed as extensive and publicly available, as are those

of the Programme to combat energy poverty with key stakeholders in all documents including various public institutions dealing with the energy transition in Croatia, NGOs, experts, academia representatives, building and energy sector and businesses, and other physical and legal entities (around 200 stakeholders, in total). As part of the drafting process, the Long-term strategy had five rounds of "Open Dialogues of Partners" between various stakeholders and with reports on the major conclusions of these dialogues that covered topics like: technical measures, energy poverty, Act on Construction, etc. Moreover, Long-term strategy contains the summary of the public consultations process as a separate chapter. They lasted one month, and the comments didn't indicate, according to the Strategy, the need for major changes of the draft. Overall, the Programme of energy renovation of MABs explicitly states that the process of its development and production was "participative".

One shortcoming of the Programme of Energy Renovation of MABs and Programme to combat energy poverty is the evident lack of Open Dialogues of Partners, variation of which would have been beneficial for their key stakeholders. Also, there seems to be no evidence or publicly available report on the results of the Expert Commission. Namely, the Ministry of Spatial Planning and Construction (MPGI) formed an extensive Expert Commission for the development of a program of energy renovation of buildings until 2030. This commission brings together various state administration bodies responsible for energy, social welfare, strategic planning, European Union funds and cultural heritage, as well as representatives of regional energy agencies, experts, associations (including authorized energy certifiers, designers and other experts in the field of construction who are members Croatian Council for Green Building) and financial institutions. During the development of the Programme of energy renovation of MABs thematic meetings were held with these stakeholders, whose relevant proposals were integrated into the Programme of Energy Renovation of MABs to ensure its acceptance and implementation.

Furthermore, within the analysed documents the local and regional level of energy renovation in MABs is recognized. In the Long-term strategy, the contribution to energy saving in buildings and entire neighbourhoods are recognized through, for example, application of green infrastructure. The local level is also recognized in the context of the contribution of energy communities and RES communities to the overall energy transition. One important measure defined in the Long-term strategy is the establishment of "one-stop-shops", which are extensively described and to be financed from the budget of the local authorities. They are also to be organized through regional and local energy agencies, state Funds, and other mechanisms and are defined as "flexible" and "adaptive" models. The biggest obstacle for the local level, recognized in the Long-term strategy, is the large indebtedness of municipalities. Furthermore, the Long-term strategy recognizes the importance of efficient communication channels for knowledge and experience transfer of different levels of government (national, regional, county, and local). Also, the importance of capacity building through local info-centres is recognized. The research, analytical and financial measure MS-9 "Improving the sustainability of urban environments" also contributes to local energy renovations of MABs through three separate activities: Green infrastructure development program in urban areas; Circular space management development program; Implementation of green infrastructure and circular space management projects through co-financing programs from EU funds. Policies and measures to promote smart technologies and well-connected buildings and communities are defined predominantly at the local level through smart city development strategies.

In the Programme of Energy Renovation of MABs, the need for adopting a regionalized/spatialized/localized approach is also emphasized. One-stop-shops are also recognized in measure C6.1 R3 "Increasing efficiency, reducing administrative burden and digitizing the renovation process". The entire Programme to combat energy poverty, is developed to have both direct and indirect effects and benefits, primarily at the local level.

Considering vulnerable groups, the major issue of energy poverty in general in Croatia is a lack of data concerning its intensity and scope, on the national, regional, and local level. In this regard, the major problem of energy poor co-owners in MABs is shaped by the lack of a definition of energy poverty which hinders development of general criteria and methodology for determining energy poor co-owners. This is explicitly stated in the Long-term strategy. The Long-term strategy also indicates that in addition to the guaranteed minimum compensation criteria (receivers of which can be regarded as citizens at risk of energy poverty, but they are mainly beneficiaries of the welfare system), some of the most important criteria that have been discussed and will be further elaborated as indicators of the risk of energy poverty are: Household income; Energy class of the building; Square footage per household member; Total energy costs in relation to total household income; Other categories of social status (disability allowance, child allowance, pensioners with a minimum pension, social health census, property-ownership census, etc.). Further criteria for determining vulnerable groups of citizens/households affected by energy poverty (scoring criteria and proposing new criteria), and according to energy poverty criteria are recommended in the second round of previously mentioned "Open Dialogues of Partners" (from largest sum of points to smallest): Low household income / income per household; Energy class of the building (QH,nd i.e. heating needs); Guaranteed minimum compensation; Square footage per household member; Total household energy costs in relation to total household income; Share of the energy basket per household income (heating, hot water consumption, lighting, electricity consumption); Personal disability allowance; Recipients of child allowance; Pensioners with a pension of less than ...; Area development index rate; Social health census; Single parents; Total heating costs in relation to total household income; Property ownership census; Confirmation that there is no other real estate; Health risk assessment; Ownership; Actual energy consumption proven by bills (per m2).

In the Programme of Energy Renovation of MABs, it is explicitly stated that the implementation models of this programme are defined according to specific target groups, namely, among co-owners of MABs, socially vulnerable groups of citizens, i.e. citizens in risk of energy poverty. They are also the targeted group of some alternative financial mechanism of the renovation of MABs, like the proposed Social Fund for Climate Policy. When considering the Programme to combat energy poverty, some criteria are defined but do not rely on most of the previously mentioned proposed criteria. Nevertheless, it is a detailed plan of renovation of MABs at at the local level with clear benefits and direct positive impacts on the tenants at risk of energy poverty (energy poverty alleviation; improved health of tenants; local employment; spatial planning; increasing the value of real estate) and indirect (the remaining and settlement of the population in the mentioned areas, i.e. the demographic revitalization of the Republic of Croatia; Reducing health system expenditures; the overall economic development of supported areas and areas of special state care; Suppression of the grey economy) described impacts locally."

A national campaign that would aim to stimulate a widespread public discussion about the necessary measures of the energy renovations of MABs could have been more widespread, especially considering the needs of the most vulnerable neighbourhoods or co-owners. In this sense, even though the above-mentioned documents sporadically mention the need for further understanding of the needs of vulnerable groups (e.g. the Programme of Energy Renovation of MABs addresses the need for conceptualising and measuring energy poverty in MABs in Croatia), there is an evident lack of informative measures in the sense of educational and promotional activities that would stimulate co-owners and vulnerable groups to participate in the renovation process more actively.

Summary and identified barriers

The second segment of potential barriers refers to national measures for energy renovations of MABs and energy poverty alleviation in MABs. Regarding this topic we were interested in whether said measures are:

- **Suitable and comprehensive** enough given the specific national context, and, for that purpose, created inclusively as a result of social dialogues with key stakeholders;
- Sufficiently addressing the importance of energy renovations of MABs and energy poverty alleviation in MABs on a **local and/or regional level** in Croatia;
- **Recognizing vulnerable social groups** at all levels in Croatia and specifically addressing energy poverty in residential, multi-apartment buildings.

Summary: The analysed regulations and programs in Croatia emphasize a broad range of technical and financial measures for energy renovations of MABs, with the Programme of Energy Renovation of MABs offering the most comprehensive list. The inclusion of stakeholders in the measure creation process was extensive, involving around 200 stakeholders through public consultations and "Open Dialogues of Partners." However, notable gaps in financial measures remain, especially concerning the deep renovation of MABs. The analysed documents recognize the importance of local and regional levels in energy renovations of MABs, emphasizing the need for clear targets, indicators, and consensus mechanisms in spatial planning.

The Long-term strategy and Programme of Energy Renovation of MABs include measures such as the establishment of "one-stop-shops" and capacity building through local info-centres, addressing the unique challenges municipalities face, including large indebtedness. Long-term strategy recognizes financial obstacles on the local level, but the support of local authorities is incremental in the renovation process, which is why the measures promote the development of green infrastructure, circular space management, and smart technologies, reflecting a regionalized approach to energy renovation that considers local needs and capabilities.

The analysed documents highlight a major issue of lacking data on the intensity and scope of energy poverty at all levels, which hinders the definition of criteria for determining energy-poor co-owners in MABs. The Long-term strategy outlines potential indicators of energy poverty, such as household income and energy costs, while the Programme of Energy Renovation of MABs targets socially vulnerable groups and proposes the Social Fund for Climate Policy as an alternative financial mechanism. The Programme to combat energy poverty lacks alignment with proposed indicators, but it

does offer a detailed local plan with both direct and indirect benefits. There is an evident lack of widescale national campaigns to stimulate public discussion and participation, especially in vulnerable neighbourhoods. Furthermore, there is a deficiency in educational and promotional activities to encourage co-owners and vulnerable groups to actively participate in the renovation process.

Identified barriers regarding the MEASURES for energy renovations and energy poverty alleviation in MABs:

1. Financial gaps in deep renovation: Despite the comprehensive measures outlined in the Programme of Energy Renovation of MABs, significant financial gaps remain, particularly for deep renovations which introduces uncertainty in the possibility of implementation of devised measures.

2. Insufficient data on energy poverty: The lack of detailed data on the intensity and scope of energy poverty at all levels hinders the definition of criteria for determining energy-poor co-owners in MABs, a pre-requisite for efficient development and implementation of measures.

3. Lack of public engagement and educational activities: There is an evident lack of widescale national campaigns and educational initiatives to stimulate public discussion and participation about the needs and circumstances of energy poor households living in MABs and vulnerable neighbourhoods, and to encourage co-owners and vulnerable groups to actively engage in the renovation process.

5.3. Implementation and monitoring

The Ministry of Economy and Sustainable Development[10] has a key role in the implementation of national energy and climate policies. In accordance with the Act on Energy Efficiency, this institution is responsible for systematic monitoring of implementation through the (digital) system for monitoring, measuring, and verifying energy savings (SMiV), reporting, and informing the public about plans, implemented measures and their effects. This tool is recognized throughout all the relevant analysed documents. This relates to energy renovations of MABs as well as the energy poverty alleviation in MABs, as defined in the Programme to combat energy poverty. The monitoring process through SMiV and its main aspects are sufficiently described in detailed within the Programme of energy renovation of MABs. Concerning the transparency of the process, reporting is also regulated by the Act on Energy Efficiency, and its Article 9 stipulates the obligation to prepare an annual report on the progress achieved in achieving national energy efficiency goals by March 15 of the current year for the previous year. This report, as specified in point 4, paragraph 2 of that article, should include an analysis of energy savings achieved by applying the alternative political measures and their contribution to the overall national goal of savings in immediate energy consumption. Even though the Act on Energy Efficiency proscribes that this report should be publicly available and even defines the internet platform that should be used, the report cannot be found online, and the platform works only partially as SMIV portal. The main purpose of SMIV is to monitor the implementation of energy efficiency action plans, namely the National Energy Efficiency Action Plan and the Energy Efficiency Action Plans that regional authorities and large cities are obliged to adopt in accordance with the Law. Their obligation is to submit annual reports on

[10] As of May 2024, this Ministry now operates as two separate ministries, the Ministry of Economy and the Ministry of environmental Protection and Green Transition.

measures to improve energy efficiency, as well as data on achieved energy savings calculated in accordance with the Ordinance. The Fund for Environmental Protection and Energy Efficiency uses SMIV system to keep track of energy savings in projects that use public funds.

Besides SMIV, ISGE portal is used by the Agency for Transactions and Mediation in Immovable Properties to keep track on energy efficiency in public buildings. Furthermore, there is limited contribution and access of end users of energy renovations of MABs (co-owners) to this system. Moreover, there seems to be no reference of energy poverty indicators and subsequent monitoring within SMiV. Additionally, it would be beneficial to include privately financed projects or projects funded from other public funds within SMiV methodology and database. Finally, there seems to be no evidence of user and publicly available expert assessment of the efficiency of the data collection process, data reliability, utilization, and reporting through SMiV.

The concept of just transition is not explicitly integrated within the analysed documents and it remains unclear within the documents how the energy renovations of MABs and energy poverty alleviation in MABs and vulnerable neighbourhoods are to contribute to greater levels of social inclusion and reduction of social inequalities, on a national or local level in Croatia. In general, legislative obstacles related to the establishment of energy communities and other citizen energy initiatives have so far prevented the actual implementation of such measures in the MABs. Several obstacles have been identified, majorly stemming from the Act on the Electricity Market and the Act on Renewable Energy Sources and High-efficiency Cogeneration. These laws represent a strong contrast to the objectives of the RED II and IMED directives. The main obstacles concerning citizen energy communities include the legal form of citizen energy communities, their geographic scope, membership restrictions, and complex and expensive procedures unsuitable for small organizations.

Summary and identified barriers

The last analysed segment of national legislation and policies was related to potential barriers in the process of implementing and monitoring the above-mentioned measures for energy renovations of MABs and energy poverty alleviation in MABs. This mainly refers to the assessment of:

- **Governing bodies** overseeing the implementation and monitoring of the measures and the **transparency and efficiency** of the implementation and monitoring processes;

- Available national **financial instruments and mechanisms** and the perceived **gaps between the necessary and available public resources** for the implementation of measures;

- **Just transition and social inclusion** elements in the planning and implementation of measures and the role of **citizen energy initiatives** energy building renovations of MABs and energy poverty alleviation in MABs;

Summary: The Fund for Environmental Protection and Energy Efficiency oversees the implementation and monitoring of energy renovations of MABs using the SMiV system. Transparency is ensured through annual reports on national energy efficiency progress However, SMiV only tracks projects subsidized by the Fund and excludes tracking of MABs renovated from non-public resources, lacks energy poverty indicators, and has

limited user access, with no evidence of publicly available expert assessments on data validity and reliability. There is a visible gap in between available public funding and needs mapped both in the Program for Energy Renovation of MABs and Strategy. This means that new financial instruments need to be put in place to cover the identified needs.

Possibly stronger collaboration with banking sector is needed but also additional support covering energy poor households is needed. The analysed documents do not explicitly incorporate principles of just transition and social inclusion for energy renovations of MABs or energy poverty alleviation. Citizen energy initiatives are recognized primarily through the LTRS, but face significant legislative obstacles.

Identified barriers regarding the IMPLEMENTATION AND MONITORING processes for energy renovations and energy poverty alleviation in MABs:

1. Limited scope and accessibility of SMiV system: The SMiV system, used to track energy renovation projects, only includes those subsidized by the Fund for Environmental Protection and Energy Efficiency. It lacks energy poverty indicators, excludes projects funded from non-public resources, and lacks continuous monitoring of energy savings once initial data is entered for MABs and non-public residential buildings. It also has limited user access, with no publicly available expert assessments on data validity and reliability.

2. Financial gaps and need for new instruments: There is a gap between available public funding and the needs identified in the Program for Energy Renovation of MABs and the Strategy. New financial instruments and stronger collaboration with the banking sector and/or private sector are needed, along with additional support for energy-poor households.

3. Lack of just transition and social inclusion principles: The analysed documents do not explicitly incorporate principles of just transition and social inclusion for energy renovations of MABs or energy poverty alleviation. Citizen energy initiatives, such as RES communities, are recognized but face significant legislative obstacles.

6. Barriers related to public calls to energy renovations of MABs in Republic of Croatia

The analysis of public calls for energy renovation in Croatia reveals several key trends and areas for improvement. Over the years, there has been a noticeable increase in financial resources allocated for energy renovation projects, reflecting the growing prioritization of energy efficiency. Despite this, the number of applications and approved projects has fluctuated significantly, suggesting potential changes in application processes, eligibility criteria, or awareness levels.

The analysis highlights a systematic approach to managing public calls, with evolving criteria and application processes aimed at enhancing efficiency and inclusiveness. However, there are gaps, particularly in addressing the needs of energy-poor households, who were not included in these programs. The lack of criteria for identifying energy-poor households and the absence of targeted financial support reflects a significant oversight that undermines the inclusiveness of these initiatives.

The renovation activities eligible for funding are comprehensive, covering a wide range of measures from basic energy audits to advanced energy system upgrades and renewable energy installations. The co-financing rates are variable, reflecting different priorities and funding strategies. However, fewer households are being included in more recent years, possibly indicating a shift towards larger, more complex projects.

Despite the stringent requirements for energy savings and a strong emphasis on renewable energy, the exclusion of energy-poor households from these benefits represents a critical area for improvement. Addressing energy poverty through targeted support could enhance the overall effectiveness and equity of energy renovation programs in Croatia.

1. **Fluctuating Application and Approval Rates**

The number of applications and approved projects has shown considerable variation over the years. For example, in 2016 there were 649 applications with 584 projects approved, whereas in 2022 there were only 236 applications and 105 approvals. This inconsistency may be due to changes in application processes, eligibility criteria, or fluctuating levels of awareness and participation.

2. **Complexity of administrative procedures and limited project management capacities**

Complex administrative requirements and procedural barriers may discourage applicants and especially building managers and co-owners who often lack the necessary expertise or experience in managing energy projects. These factors can lead to procedural errors and a decrease in the number of successful applications.

3. **Lack of focus on energy-poor households**

The analysis highlights a significant gap in the inclusiveness of the programs, as energy-poor households have not been prioritized. There are no criteria for identifying energy-poor households, and no grants were specifically allocated for them. This oversight means that vulnerable groups who might benefit the most from energy efficiency improvements are excluded. Some regions have a higher rate of energy-poor households. Without tailored outreach programs and additional support, these areas may continue to lag in energy efficiency improvements, perpetuating regional disparities.

4. **Variable co-financing rates**

The co-financing rates for renovation projects range from 60% to 100%, depending on the type of activity. This variability can create uncertainty for applicants, as the financial support they might receive can significantly differ. Additionally, the rates for renewable energy sources projects are also varied (60-80%), which could complicate planning and budgeting for projects.

5. **Lack of performance-based incentives**

There are no specific incentives for projects that achieve higher energy savings or integrate innovative technologies. This lack of performance-based rewards may discourage ambitious projects that aim for maximum efficiency and sustainability.

6.1. Efficiency of public calls

Table 5 presents the efficiency and effectiveness of public calls in Croatia highlighting the total value of a call, range of awarded grants, and number of applicants that have been approved.

Table 5. Efficiency and effectiveness of public calls in Croatia

Public Call	The total value (available financial resources)	The highest and lowest amounts of grants that can be awarded to an individual project	Number of projects applied to the Call	Number of applied projects that have been approved
Call for project proposals - Energy renovation of multi-apartment buildings (2024, 2022, and 2016)	In 2024: 94.235.322,37 EUR In 2022: 39.816.842,52 EUR In 2016: 20.173.866,88 EUR	In 2024: 40.000,00 EUR - 4.500.000,00 EUR In 2022: 19.908,42 EUR - 2.919.901,79 EUR In 2016: Group 1: 13.272,28 EUR - 1.725.396,50 EUR Group 2: Not applicable - 605.216,00 EUR	In 2022: 236 applications In 2016: 649 applications	In 2022: 105 projects In 2016: 584 projects

There's a noticeable increase in the financial resources allocated for energy renovation projects over the years. For instance, the total value available in Croatia increased from 20.17 million EUR in 2016 to 94.24 million EUR in 2024, reflecting growing investment and prioritization of energy efficiency in policy agendas.

The highest and lowest grant amounts vary significantly across the years. For example, the highest amount awarded to an individual project in 2024 is 4.5 million EUR, while in 2016 it was 1.725 million EUR. This variability indicates an adaptation to different project scales and funding needs over time.

The number of applications and approved projects shows considerable fluctuation. For example, in 2016, there were 649 applications in Croatia, which decreased to 236 in 2022. Similarly, the number of approved projects also varied, with 584 projects approved in 2016 and 105 in 2022. This trend could reflect changes in application processes, eligibility criteria, or awareness and participation levels.

6.2. Application processes and eligibility criteria

Table 6 presents a comparison of the requirements of public calls in Croatia regarding the eligibility, ways of submitting the project, deadlines of revision, resolving the complaint, and signing the agreement.

Table 6. Comparison of application processes and eligibility criteria

Criteria	Details
Criteria for Multi-Apartment Buildings	At least 66% of the total usable area is used for housing Has three (3) or more residential units Project managed by the building manager

	No more than 25% of the above-ground building (gross) area is unheated
Eligible Applicants	Authorized representative of the co-owner of the multi-apartment building Building manager
Percentage of Interested Co-Owners Required	51% (share in co-ownership in MAB and majority of the number of co-owners)
Manner of Application Submission	Last two Calls electronically First Call by post or personally
Duration of Application Revision Process	Maximum of 3 months, but the deadline can be extended to 4 months First Call took 4 months
Duration for Resolving Complaints and Signing the Agreement	30 working days from the day of receipt of the complaint, In 2024 and 2022 - not longer than 30 days, in 2016 - 45 calendar days for signing the Agreement

The criteria for eligible buildings include stipulations that ensure a significant portion of the building is used for residential purposes and that the building has sufficient residential units and appropriate management. This standardization helps target funding towards buildings that will benefit the most from energy renovations.

Eligible applicants are clearly defined, focusing on the authorized representatives and building managers. This ensures that the application process is managed by individuals who have the authority and responsibility to oversee the renovation projects.

A majority (51%) of co-owners' consent is required to initiate a project application. This requirement ensures that there is significant buy-in from residents, which is crucial for the success of communal renovation projects.

There is a clear shift towards electronic submission of applications, with the last two calls requiring electronic submissions, compared to the initial call, which allowed for postal or personal submissions. This trend towards digitalization aims to streamline the application process and increase accessibility.

The average duration for the application revision process is set at a maximum of 3 months, with the possibility of extending to 4 months. This flexibility ensures that there is enough time to thoroughly review applications while still adhering to a predictable timeline. The period for resolving complaints is consistently set at 30 working days, ensuring that applicants have a clear timeline for when they can expect issues to be addressed. This transparency is crucial for maintaining trust in the application process. The deadlines for signing agreements are strictly defined, with the first call allowing up to 45 calendar days for signing. This helps to ensure that once a project is approved, the formalities are completed promptly, allowing projects to commence without unnecessary delays.

These trends reflect a systematic and evolving approach to managing public calls for energy renovations in Croatia, focusing on clarity, efficiency, and inclusiveness.

6.3. Renovation activities and co-financing rates

Table 7 presents data on various aspects of these programs, including the acceptable project activities, co-financing rates, the number of square meters included, obligatory energy savings, and included renewable energy sources (RES).

Table 7. Renovation activities

Acceptable project activities	Creating project documentation (energy audit and energy certificate before and after the renovation and creation of the main project energy renovations and others project documentation) Implementation of energy renewal measures: Reconstruction of the building envelope, thermal protection, waterproofing, sheath drainage, external sun protection systems thermal protection, waterproofing, drainage of walls, windows, doors, installation of a green roof/façade, installation or improvement of technical systems for heating, cooling, ventilation, air conditioning, hot water, installation or improvement of the heating/hot water system from RES (pellets, heat pumps, solar collectors), installation of photovoltaic systems for shared consumption, including energy storage, replacing interior lighting with more efficient ones, introduction of automation and building management, measures to increase safety in case of fire, measures to ensure healthy indoor climate conditions, measures to increase earthquake resistance by at least 10%, installation of green infrastructure, sustainable urban mobility (bicycle parking lots), electromobility (charging stations for electric vehicles) Management project and administration Promotion and visibility project
The minimum and maximum rates of co-financing measures for the same activities.	60 - 100 %
Number in square meters in total that were included in the call / program	In 2022 425.114,41 m² (almost 5.000 households) In 2016 16.000 households.
Obligatory annual minimum energy savings for heating compared to the condition before renovation.	50%
Obligatory annual primary energy savings compared to the situation before the renovation.	50%
Included RES in the Call / Program	Heat pumps, solar collectors, photovoltaics, solar heating, i.e. preparing the consumption of hot water, heating plants or biomass boilers
RES co-financing rate	60 – 80 %

The data suggests a broad scope for acceptable project activities, ranging from basic energy audits to advanced energy system upgrades and green infrastructure implementations.

The co-financing rates vary significantly, which could reflect different priorities or funding strategies aimed at various aspects of energy efficiency and sustainability.

There's a noticeable trend of fewer households being included in more recent years (2022 vs. 2016), which may indicate a move towards targeting larger or more complex renovation projects that cover more square meters per project.

The consistent requirement of 50% energy savings for both heating and primary energy usage highlights the program's stringent energy efficiency standards.

The inclusion and co-financing of RES technologies indicate a strong commitment to promoting renewable energy within the context of energy renovations.

These trends reflect a structured approach to enhancing energy efficiency and sustainability in Croatian building renovations, with a clear emphasis on both broad participation and high standards for energy savings and renewable energy integration.

6.4. Energy poverty

The energy renovation calls in Croatia did not prioritize or make special provisions for vulnerable households. This points to a potential gap in the program's inclusiveness and effectiveness, especially for those most vulnerable to energy poverty.

The absence of criteria for energy-poor households suggests a significant oversight in the planning and implementation of energy renovation programs. Without clear criteria, it is challenging to identify and support households that might struggle the most with energy costs and inefficiencies. This lack of definition could lead to the exclusion of these households from the benefits of energy renovation programs, perpetuating energy poverty.

No grants were used for energy-poor households which demonstrates a lack of financial focus on supporting these groups. This trend highlights a critical area where the call could improve by allocating resources specifically aimed at reducing energy poverty through targeted renovations and energy efficiency improvements.

7. Policy recommendations for improvements of national regulatory framework

The proposed general recommendations outline broad guidelines for public policies aimed at improving the process of achieving energy efficiency goals, particularly focusing on the energy renovation of MABs in Croatia and energy poverty alleviation in MABs. Energy inefficiency of multi-apartment buildings remains one of the key infrastructural barriers to sustainable management of renewable energy and the overall transformation of energy production and consumption systems in Croatia. Apart from the major role that the transformation of the residential sector plays in the overall energy transition in Croatia, ensuring the energy efficiency of residential buildings through comprehensive energy renovation is a crucial initial step toward unlocking the significant potential of citizen energy in MABs in Croatia. This effort also greatly contributes to the overall decarbonization of the housing sector and the attainment of the goals[11] of transforming the European building stock into (nearly) zero-emission buildings.

These recommendations stem from previously displayed analysis of previous public calls for energy renovations of MABs in Croatia, and the barriers identified in the analysis of the regulatory and policy framework outlining energy renovations of MABs and energy poverty alleviation in Croatia. Implementing elements of these policy recommendations into the current procedures, policies and legislation could

[11] In March 2023, the European Parliament adopted a draft of measures aimed at increasing the rate of energy renewal and reducing energy consumption and greenhouse gas emissions. The proposed revision of the Energy Performance of Buildings Directive (EPBD) aims to significantly cut greenhouse gas emissions and energy consumption in the EU building sector by 2030, with the goal of achieving climate neutrality by 2050. Starting in 2028, all new buildings are required to be zero-emission and equipped with solar technologies, while residential buildings undergoing major renovations must meet these requirements by 2032. Nearly zero-emission buildings (nZEB) are defined as having very high energy performance, with the remaining low energy needs being met predominantly by renewable energy sources (Act on Construction; Official Gazette, 153/13, 20/17, 39/19, 125/19).

significantly enhance the effectiveness, inclusiveness, and sustainability of energy renovation calls in Croatia, leading to improved energy efficiency and ultimately result in reduced energy poverty across the country.

RECOMMENDATION 1: **Establish a comprehensive data collection system to accurately define and assess energy poverty at national, regional, and local levels.**

A significant issue in addressing energy poverty on any level, and thus identifying those most in need of energy renovations of their dwellings, is the lack of data on its intensity and scope in Croatia, as highlighted in the Long-term strategy. This data deficiency hinders the development of general criteria and methodologies for identifying energy-poor co-owners in MABs. For instance, while the Programme of energy renovation of MABs identifies socially vulnerable groups, the lack of representative data (on energy consumption, energy and socio-economic characteristics of households, energy consumption habits, quality of housing and living conditions, opinions and attitudes on different aspects of energy consumption, etc.) limits the effectiveness of targeted interventions. Implementing a robust data collection system on a national level would provide the necessary foundation for developing tailored measures to alleviate energy poverty in MABs, ensuring that policies and subsequent legislations are informed by accurate and comprehensive data. This would also aid in the detection and informed analysis of potential areas of barriers to higher energy renovation rates of MABs in Croatia and aid in the development of educational, financial, and other policy measures to remove such barriers from the residential sector in Croatia.

In that way many of the challenges related to financing energy renovations of dwellings of energy poor households could be addressed. For example, establishing criteria for determining (risk or vulnerability to) energy poverty could aid in the development of dedicated financial resources for energy-poor households to support their inclusion in energy renovation projects with subsidies or low-interest loans specifically aimed at reducing energy costs for vulnerable groups. In this sense and related to the public calls analysis and identified barriers, defining energy poverty is crucial to developing a financial focus through public funding on households most benefiting from energy renovations of their dwelling. Additionally, identifying the needs and constraints of energy poor households could also result in the development of flexible co-financing rates that can be tailored to the needs of different projects and applicants. This could involve higher co-financing rates for smaller projects or those usually undertaken by energy-poor households.

RECOMMENDATION 2: **Improve existing monitoring mechanisms, like the SMiV or ISGE systems, by ensuring comprehensive tracking of energy renovations of residential MABs and reporting of energy poverty indicators in MABs.**

Although the analysed documents display sufficient ambition in line with current EU targets regarding renovation of the residential building stock and although this analysis identified a wide array of technical, financial and other measures for achieving higher shares of energy renovation rates of MABs and energy poverty alleviation of MABs in Croatia, certain improvements of the existing monitoring mechanisms, like the SMiV system could be undertaken. The Energy Savings Monitoring, Measurement, and Verification System (SMIV) is a web application managed by the National Coordination Body for Energy Efficiency, aimed at tracking energy savings achieved through the implementation of energy efficiency measures, particularly through the National Energy Efficiency Action Plan (NEEAP). It is reasonable to state that without such

comprehensive information systems for monitoring of the implementation success of energy efficiency policies it is impossible to accurately evaluate the energy savings achieved through the incentive policy measures defined in NEEAP, as well as the activities driven by these measures. However, currently, SMiV does not reference energy poverty indicators or certain data relevant to tracking the energy efficiency of households in MABs, limiting its effectiveness in addressing energy poverty in MABs. The inclusion of these indicators would enhance the transparency and efficiency of monitoring efforts, as mandated by the Act on Energy Efficiency, which stipulates annual reporting on progress in achieving national energy efficiency goals.

By incorporating energy poverty indicators, the SMiV system would provide a clearer picture of the impact of energy poverty alleviation measures, facilitating better policy adjustments and resource allocation to address this critical issue. Additionally, SMiV only tracks projects subsidized through the Environmental Protection and Energy Efficiency Fund, which oversees data entry. It would also be beneficial to include privately financed projects or those funded by other public funds in the SMiV methodology and database. Moreover, there is no evidence of user or publicly available expert assessments of the data collection process's efficiency, data reliability, utilization, and reporting through SMiV. Such assessments could aid in easing access and transferring benefits of the system to end users of energy renovations of MABs (co-owners, building representatives or building managers). Lastly, the three main users of the application, as defined by the Act on Energy Efficiency, are the public sector, energy service providers and subsidy providers. This list should in the near future be expanded to include, for example, housing cooperatives and associations, energy communities in MABs, building representatives and other relevant experts and groups of citizens, enhancing the inclusivity and transparency of the monitoring process.

RECOMMENDATION 3: **Enhance legislative support for RES systems in MABs and citizen energy communities within MABs to facilitate energy renovations and democratize energy production.**

The current legislative framework in Croatia, specifically the Act on the Electricity Market and the Act on Renewable Energy Sources and High-efficiency Cogeneration, imposes significant barriers to the formation and operation of citizen energy communities. These obstacles include restrictive legal forms, geographic scope, membership limitations, and complex procedures that are unsuitable for small organizations such as potential citizen initiatives of co-owners in MABs. Therefore, the legal form and geographic scope requirements for citizen energy communities should be simplified and membership restrictions should be removed or reduced to make it easier for small organizations and individual citizens to participate. There is also an emphasis on streamlining and reducing the complexity and cost of procedures required to establish and manage citizen energy communities. The proposal is also to explicitly include provisions for the creation and operation of energy communities within MABs and encourage co-owners to collectively invest in and benefit from RES infrastructure by providing legal and financial incentives. Addressing these legislative gaps would not only democratize energy production but also facilitate the adoption of RES infrastructure within MABs, enhancing energy efficiency and sustainability. Addressing these legal challenges is vital and a pre-requisite for encouraging the integration of renewable energy sources (RES) in publicly financed renovation projects through higher co-financing rates and technical support which could involve incentives for installing solar panels, heat pumps, and other renewable technologies.

RECOMMENDATION 4: **Develop and implement widescale national awareness raising campaigns to stimulate public discussion and participation in energy renovations of MABs, particularly targeting vulnerable co-owners and neighbourhoods.**

There is a lack of evidence of widescale national awareness raising campaigns aimed at engaging the public in the necessary measures for energy renovations of MABs foreseen within the analysed policies. Such activities are crucial for fostering greater understanding and participation in energy renovations, especially among the most vulnerable groups, as mentioned sporadically in existing documents, but also with other key stakeholders, like building managers and building representatives. Therefore, there is a need for providing educational programs and resources for building managers, co-owners, and potential members of energy communities and encouraging community engagement and participation through workshops, seminars, and public consultations. Despite recognizing the need for further understanding and data on energy poverty, there is an evident gap in informative measures such as educational and promotional activities which could raise awareness among energy-poor households about the benefits of energy renovations and how they can access certain support systems that can assist them in energy renovation projects. In other words, implementing a comprehensive campaign would help stimulate co-owners, building managers, building representatives and vulnerable groups to participate more actively in the renovation process, addressing both awareness and engagement issues which is essential from the overarching perspective of just transition.

Such informative measures could be regarded as a pre-requisite to enhancing the overall inclusivity and transparency of the energy renovation program development process by incorporating extensive stakeholder consultations, like the Open Dialogues of Partners previously applied in the Long-term strategy. This approach should be extended to all energy renovation initiatives to ensure comprehensive but informed stakeholder engagement, including contribution from vulnerable groups and local communities. Increased transparency and participation will lead to more tailored and effective renovation policies, improving public acceptance and the overall success rate of renovation projects.

RECOMMENDATION 5: **Extend application deadlines to allow more time for potential applicants, especially those from vulnerable, marginalized or hard-to-reach communities and energy poor citizens, to apply to public calls for energy renovations of MABs.**

Extending the deadline provides an equal opportunity for individuals from marginalized communities, who may face barriers such as limited access to information, resources, or internet connectivity. Residents in remote regions often require additional time to receive, comprehend, and respond to application calls due to logistical constraints. More time allows applicants to gather necessary documents, seek professional advice, and prepare thorough and competitive applications. Additional time can also facilitate the organization of educational workshops and assistance sessions aimed at helping potential applicants understand the application process and requirements. Local NGOs and community groups can play a pivotal role in assisting applicants, but they need adequate time to mobilize and provide support. It would also be beneficial to focus efforts on marginalized and hard-to-reach communities through direct engagement with local leaders and organizations. This can be done by establishing new (like One-stop shops, as defined in the LTRS, pg.37) or empowering existing focal points of information (housing associations and cooperatives, local NGOs, building

representatives and managers, etc.) regarding energy renovation of residential objects, where potential applicants can receive guidance and support throughout the application process. It is also necessary to enhance the accessibility to public calls, for example, by providing printed materials and application forms in multiple languages and adjusted formats accessible to individuals with disabilities. By extending the application deadlines, the public call for grants will become more accessible, fostering a more inclusive and effective energy renovation program for multi-apartment buildings.

RECOMENDATION 6: **Conduct regular reviews of energy renovation programs to assess their impact and identify areas for improvement.**

By collecting and analysing feedback from participants about the application process, analysing (un)achieved energy savings, and evaluating the socio-economic circumstances and benefits for past, present and potential applicants' future public calls for energy renovations of MABs in Croatia could be further enhanced to better target and address existing challenges of households in vulnerable districts and unrenovated MABs. Also, by conducting such regular reviews future public calls for energy renovations of MABs in Croatia could better support regions with lower participation rates or higher levels of energy poverty to ensure just distribution of resources. This could involve tailored outreach programs and additional support for applicants from these areas. Additionally, such reviews could ensure transparency in the allocation of funds and the decision-making process by publishing detailed reports on program outcomes and engaging stakeholders in the evaluation process. Also, the benefit of such regular evaluations could aid in identifying potential areas of investments in capacity building for local authorities and organizations dedicated to supporting energy renovation efforts more effectively through tailored training programs, technical assistance, and funding opportunities for local initiatives.

Annex 1

Instrument "T3.1 National regulatory framework analysis"

GENERAL INFORMATION

Q.1 Country

- Croatia
- Slovenia
- Romania
- Estonia
- Poland

Q.2 Document title (English)

(Open-ended question)

Q.2.1. Link to the document (if available)

(Open-ended question)

Q.3 Year of publication

(Open-ended question)

Q.4 Main subject area (eg., energy, buildings, ownership, etc.)

(Open-ended question)

Q.5 Secondary subject area (if applicable)

(Open-ended question)

Q.6 Version of the document

- Final
- Draft

ENERGY RENOVATIONS OF MABs

Q.7 Key STAKEHOLDERS (e.g. building owners, tenants, citizens, energy agencies etc.) specified by the document

(Open-ended question)

Q.8 The document sets quantitative TARGETS for energy renovations of multi-apartment buildings (y/n)

- Yes
- No

Q.9 If YES, insert target(s) in corresponding units

(Open-ended question)

Q.10 The document specifies MEASURES for energy renovations of multi-apartment buildings (y/n)

- Yes
- No

Q.11 If YES, provide a list (without description) of specified measures. Please copy & paste measures from the referenced document.

(Open-ended question)

Q.12 The document specifies FINANCIAL SCOPE for implementation of measures (y/n)

- Yes
- No

Q.13 If YES, insert the financial scope of each measure (if available) in EUR

(Open-ended question)

Q.14 The document specifies FINANCIAL SOURCES for implementation of measures (y/n)

- Yes
- No

Q.15 If YES, provide a list (without description) of specified financial sources. For each identified measure please copy & paste the financial source (if available) from the referenced document.

(Open-ended question)

Q.16 Overall self-assessed RELEVANCE of the document for the ENERGY RENNOVATIONS OF MABs

- Low
- Medium
- High

ENERGY POVERTY IN MABs

Q.17 The document ADDRESSES energy poverty alleviation in MABs, in general (y/n)

- Yes
- No

Q.18 The document specifies concrete MEASURES for energy poverty alleviation in MABs (y/n)

- Yes
- No

Q.19 If YES, provide a list (without description) of specified measures. Please copy & paste measures from the referenced document.

(Open-ended question)

Q.20 The document specifies FINANCIAL SOURCES for implementation of measures (y/n)

- Yes
- No

Q.21 If YES, provide a list (without description) of specified financial sources. For each identified measure please copy & paste the financial source (if available) from the referenced document.

(Open-ended question)

Q.22 The document specifies FINANCIAL SCOPE for implementation of measures (y/n)

- Yes
- No

Q.23 If YES, insert the financial scope of each measure (if available) in EUR

(Open-ended question)

Q.24 Overall self-assessed RELEVANCE of the document for ENERGY POVERTY ALLEVIATION IN MABs

- Low
- Medium
- High

CITIZENS ENERGY IN MABs

Q.25 The document defines the conditions for establishing citizen energy initiatives in MABs, e.g. energy communities or RES communities (y/n)

- Yes
- No

Q.26 Which types of citizen-led energy initiatives are referenced?

(Open-ended question)

Q.27 Overall self-assessed RELEVANCE of the document for CITIZENS ENERGY IN MABs?

- Low
- Medium
- High

Annex 2

Instrument "T3.1 National regulatory framework analysis_Open form"

Q1. Based on the reviewed national regulations and other official documents concerning energy building renovations, please describe the overall current level of ambition of your country for energy building renovations of MABs as they relate to specific national targets (if there are any) and those set by the EC. How well or poorly do current national targets reflect the necessity of wide scale energy building renovations of private households in your country? In your opinion, how important is the energy building renovations of MABs in the overall energy transition in your country, and/or is it prioritised in national planning of energy transition?

(Open-ended question)

Q3. Is there a coherency of identified targets across the relevant legislation and official documents? Are there any sectoral or any other discrepancies as they relate to the planning of energy building renovations of MABs and/or energy poverty alleviation of MABs? If so, please provide a brief description of them.

(Open-ended question)

Q4. Based on the reviewed national regulations and other official documents concerning energy building renovations, please briefly assess the suitability of identified measures for energy building renovations of MABs for the existing national context. If applicable, please describe the process of inclusion of key stakeholders in the (co-)creation of said measures and/or public discussion of defined measures. Are there any specific measures that are lacking in the national planning that should be implemented in your country regarding its specific infrastructural, institutional, socio-economic, and cultural background?

(Open-ended question)

Q5. How do the existing measures address the regional and/or local level in your country? Are there specific measures for cities and regions and how well or poorly do they reflect the actual needs and capabilities of sub-national units to implement said measures? Are there any inconsistencies regarding the conceptualisation of measures for energy building renovations of MABs between the national and local/regional level and, if so, please provide a brief description of them.

(Open-ended question)

Q6. How well or poorly do these measures recognize vulnerable social groups at the national and local levels in your country? Which social groups are, and which ARE NOT identified within the analysed legislation and official documents but are potentially especially vulnerable in your country? How well or poorly is energy poverty in MABs addressed in said documents considering existing measures? When considering the analysed documentation, is there a clear connection (in terms of main benefits, obstacles, etc.) between energy renovation of MABs and national and/or regional energy poverty alleviation?

(Open-ended question)

Q7. Which governing bodies oversee the implementation and monitoring of the measures for energy rennovantions of MABs defined in the analysed documents in your

country? Please briefly assess the transparency and efficiency of these processes or entities in the implementation and monitoring processes.

(Open-ended question)

Q9. When considering the analysed documents, is there an obvious institutional jurisdiction for the implementation and monitoring of measures of energy building renovations of MABs and energy poverty alleviation of MABs? Which (types of) institutions are accentuated the most in this regard in your country and how? How well or poorly are various national institutions coordinated within the existing planning, if at all, and how do you assess their role in the implementation?

(Open-ended question)

Q10. To what extent do the analysed documents recognize and incorporate principles of just transition and social inclusion in the planning and implementation of measures of energy building renovations of MABs and energy poverty alleviation of MABs? Do the analysed documents recognize the need for wider social dialogue and public participation in these processes, as described in the analysed documents? In this regard, how are these processes described? Which social actors are highlighted and given priority, and which ones ARE NOT, but should be, considering the wider social context? To what extent and how well or poorly is the concept of citizen energy initiatives incorporated within the analysed documents and how is its role defined regarding energy building renovations of MABs and energy poverty alleviation in MABs?

(Open-ended question)

Annex 3

Instrument "T3.1 Analysis of previous public calls"

Q.1 Country

- Croatia
- Slovenia
- Romania
- Estonia
- Poland

Q.2 What year was the Call published?

(Open-ended question)

Q.3 What is the name of the Call?

(Open-ended question)

Q.4 What is the criteria for a multi-apartment buildings? (e.g. Percentage of the total usable area that is used for housing; Minimum number of residential units; has a building manager, and other criteria)

(Open-ended question)

Q.5 Who are eligible applicants?

(Open-ended question)

Q.6 What is the (majority) percentage of interested co-owners required to initiate a project application for this Call?

(Open-ended question)

Q.7 How is the application submitted on this Call (e.g. electronically, by post)?

(Open-ended question)

Q.8 How long does the application revision process last, on average? (e.g. by calculating the time difference between the date of the application and the date of the notification of approval). Please specify in months, weeks, or days.

(Open-ended question)

Q.9 How long does it take for the complaint to be resolved?

(Open-ended question)

Q.10 What is the deadline for the signing of the Agreement from the date of adoption of the Funding decision?

(Open-ended question)

Q.11 How long is the maximum project's implementation period in this Call?

(Open-ended question)

Q.12 Please specify the total value (available financial resources) of the Call, in EUR?

(Open-ended question)

Q.13 Please specify the highest and lowest amounts of grants that can be awarded to an individual project? (in EUR)

(Open-ended question)

Q.14 Please provide a short list (in bullet points) of acceptable project activities (e.g. creation of project documentation, energy renovation)?

(Open-ended question)

Q.15 What are the minimum and maximum rates of co-financing measures for the same activities? (in EUR)

(Open-ended question)

Q.16 How many projects applied to the Call?

(Open-ended question)

Q.17 How many applied projects have been approved?

(Open-ended question)

Q.18 How many square meters in total were included in the energy renovation in this Call?

(Open-ended question)

Q.19 Are energy poor households also included in the Call?

- Yes
- No

Q.20 If YES, how many energy-poor households were involved in energy renovation?

(Open-ended question)

Q.21 Please provide a short description of the criterion for the energy poor households?

(Open-ended question)

Q.22 How much of the total grant for this Call was used? (in percentage points)

(Open-ended question)

Q.23 What are the obligatory annual minimum energy savings AS DEFINED IN THE TEXT OF THE CALL for HEATING compared to the condition before renovation? (kWh/year and/or percentage)

(Open-ended question)

Q.24 What is the obligatory annual primary energy savings AS DEFINED IN THE TEXT OF THE CALL compared to the situation before the renovation? (kWh/year and/or percentage)

(Open-ended question)

Q.25 Is RES co-financing included in the Call?

- Yes
- No

Q.26 Which RES are included in the Call (e.g. photovoltaic systems for the production of electricity)?

(Open-ended question)

Q.27 What was the RES co-financing rate in this Call?

(Open-ended question)

Co-funded by the European Union

The CEESEN-BENDER project has received funding from the European Union's Programme for the Environment and Climate Action (LIFE 2021-2027) under grant agreement no LIFE 101120994. The information and views set out in this material are those of the author(s) and do not necessarily reflect the official opinion of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.