

Delivery

D3.2: Standardized guidelines for energy renovation of single-family homes and multi-apartment buildings

January 2025.

www.crossreno.door.hr



Co-funded by
the European Union

This project has received funding from the European Union's CINEA.D – Natural resources, climate, sustainable blue economy, and clean energy D.1 – LIFE Energy + LIFE Climate, Grant agreement 10112

Author	Martina Nemčić; KLIK, energy cooperative
Review	Anamari Majdandžić, DOOR Ana Smola, CGBC
Date	January 28 th , 2025

Published in January 2025 by crOss renoHome.

©crOss renoHome, 2025

All rights reserved. Reproduction is authorised provided the source is acknowledged.

All crOss renoHome's reports, analysis and evidence can be accessed from www.crossreno.door.hr. The sole responsibility for the content of this publication lies with the authors.

Disclaimer

"Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or [CINEA]. Neither the European Union nor the granting authority can be held responsible for them."

Content

1. Introduction	4
a. Why is energy renovation important for citizens	4
b. Tools available to homeowners	4
2. Purpose of the energy renovation guidelines	5
a. Why are the guidelines developed with a focus on citizens and on renovating single-family homes (OK) and multi-apartment buildings (VSZ)?	5
3. Annexes: Standardized guidelines and financing options	7

1. Introduction

Deep energy renovation: The key to sustainability and quality of life

Deep energy renovation is a process that, ideally in one step or, when not possible, through several carefully planned phases, maximizes the potential of a house or building to reduce energy consumption, considering its typology and climatic zone. The goal is to achieve the highest possible energy savings and very high energy performance, ensuring that the remaining minimal energy needs are fully met by renewable energy sources. Deep energy renovation of single-family homes and buildings is not just a technical process; it is a crucial step toward a sustainable future, reducing energy consumption, and achieving climate neutrality. In addition to energy savings and financial benefits, such renovation improves the quality of life and the indoor environment for citizens. At the European Union level, energy renovation plays a key role in achieving decarbonization goals and reducing the construction sector's contribution to climate change.

a. Why is energy renovation important for citizens

Deep energy renovation provides numerous benefits:

- **Reducing utility costs:** Energy-efficient measures can lower energy bills by 10-30%, depending on current energy consumption and the scope of renovation
- **Increasing property value:** Renovated houses and buildings with better energy efficiency become more attractive and valuable in the real estate market
- **Improved quality of life:** Better insulation, higher-quality ventilation, and the installation of renewable energy systems create a healthier and more comfortable indoor living space

b. Tools available to homeowners

The new **Directive on the Energy Performance of Buildings** introduces energy passports (Building Renovation Passports), which aim to facilitate deep renovation by providing a clear plan for step-by-step deep renovation with the best timing and scope of interventions or renovation measures. Building renovation passports are a voluntary tool that offers a clear plan for comprehensive renovation with an optimal timeline and scope of interventions or renovation measures. The same expert who issues the energy certificate (certified energy assessor) will be able to prepare the renovation passport. If the passport and certificate are issued together, the passport should replace the recommendations from the certificate. However, it should still be possible to obtain an energy certificate without a renovation passport. Additionally, citizens have access to **OSS Križevci** and **OSS Zagreb**, as well as an online **Marketplace** developed as part of the crOss renoHome project.

2. Purpose of the energy renovation guidelines

These standardized guidelines provide step-by-step instructions for energy advisors working in OSS offices and for citizens who wish to undertake comprehensive energy renovation of their homes - whether single-family houses or multi-apartment buildings. The guidelines emphasize the importance of planning renovations in phases, considering feasibility and optimal return on investment, as well as utilizing available financial support.

With careful planning and access to services such as **OSS offices**, an online **Marketplace** developed within the crOss renoHome project, and this guide, citizens can make informed decisions to efficiently initiate and manage their home energy renovation process.

This material is written to be understandable to energy advisors and homeowners, regardless of their initial familiarity with the terminology, goals, and process of energy renovation. The described materials are currently being developed as pilot schemes and will be refined until the end of the crOss renoHome project, adapting to new insights from energy advisors and regulatory changes in Croatia.

The guidelines include additional directions and links to websites that should be regularly monitored to provide up-to-date advisory services. Information on the energy renovation of single-family homes and multi-apartment buildings can be found on the following websites:

- **Ministry of Physical Planning, Construction, and State Assets:** <https://mpgi.gov.hr/>
- **Recovery Plan:** <https://planoporavka.gov.hr/>
- **Fondovi EU (eNPOO):** <https://fondovieu.gov.hr>
- **Environmental Protection and Energy Efficiency Fund:** <https://www.fzoeu.hr/>

Additionally, these guidelines are a "living" document that should be updated annually. Currently developed guideline schemes for single-family homes (OK) and multi-apartment buildings (VSZ) are included in this report as annexes and will be developed for citizen use in the form of a digital brochure or infographic, with printed versions available as needed.

a. Why are the guidelines developed with a focus on citizens and on renovating single-family homes (OK) and multi-apartment buildings (VSZ)?

The guidelines are specifically developed for the renovation of single-family homes and multi-apartment buildings based on a thorough analysis of needs at both local and European levels. During two co-creation workshops, **DOOR**, **CGBC**, and **KLIK** collaborated to identify the key target audience in Croatia - whether energy advisors or

homeowners -who would benefit most from standardized guidelines. They also assessed which types of guidelines would provide the greatest value: those focused on renovating multi-apartment buildings or single-family homes, or in fact those addressing renewable energy sources or energy efficiency.

Through a detailed evaluation, the teams prioritized the most pressing and relevant needs to ensure the guidelines effectively support the target audience.

Target Audience	Guidelines (topic)	Guidelines (topic)
Energy advisors	Multi-apartment b.	Single-family homes
Energy advisors	Renewables	Energy efficiency
Homeowners 🏆	Deep renovation of single-family homes 🏆	Deep renovation of multi-apartment buildings 🏆
Homeowners	Renewables	Energy efficiency

Figure 1: Co-creation workshop findings are highlighted – audience (homeowners) and topic (single-family homes and multi-apartment buildings) to develop in the guidelines was determined.

Target priority: Homeowners (facing many challenges)

- **Lack of information:** Many citizens don't know where to start, where to find reliable information on renovation, or whom to contact for assistance
- **Difficult decision-making:** Without clear guidelines, homeowners struggle to determine which energy renovation measures are most effective and how to implement them properly. This often leads to uninformed decisions, inefficient renovations, excessive costs, missed opportunities for energy savings, and reduced comfort
- **Financial barriers:** Few homeowners choose to self-finance renovations. Many wait for public funding opportunities and often feel unprepared to manage the renovation process independently.

Priority topic: Deep renovation of family homes and multi-apartment buildings

This topic is particularly relevant to the target audience, as many citizens need home renovations but face financial barriers, struggle to navigate complex regulations, and are unsure where to begin. While renewable energy and energy efficiency are important, there is a lack of clear national guidelines for deep renovations, or the existing information is not presented in a way that is accessible and practical for homeowners.

Since these guidelines are designed for homeowners, they must be presented in the simplest possible format to ensure initial process clarity. This will help energy advisors in One-Stop Shops (OSS) effectively guide citizens through the renovation process, and help the citizens navigate the process on their own.

To facilitate understanding, the renovation process is structured into two checklists—one for single-family homes (OK) and one for multi-apartment buildings (VSZ)—detailing the necessary steps and their optimal timing. These checklists serve as the most effective tool for both advising citizens and ensuring that energy advisors provide accurate and practical guidance, including document collection, contractor selection, and other key aspects.

3. Annexes: Standardized guidelines and financing options

- **Annex 1: Guidelines for deep renovation of single-family homes**
- **Annex 2: Guidelines for deep renovation of multi-apartment buildings**
- **Annex 3: Categories and measures of deep renovation as defined in public calls**
- **Annex 4: Public funding options for deep renovation**
- **Annex 5: Bank loan financing for renovation of single-family homes and multi-apartment buildings**
- **Annex 6: Glossary of key terms**
- **Annex 7: Legislative framework**

Annex 1: Guidelines for deep renovation of single-family homes

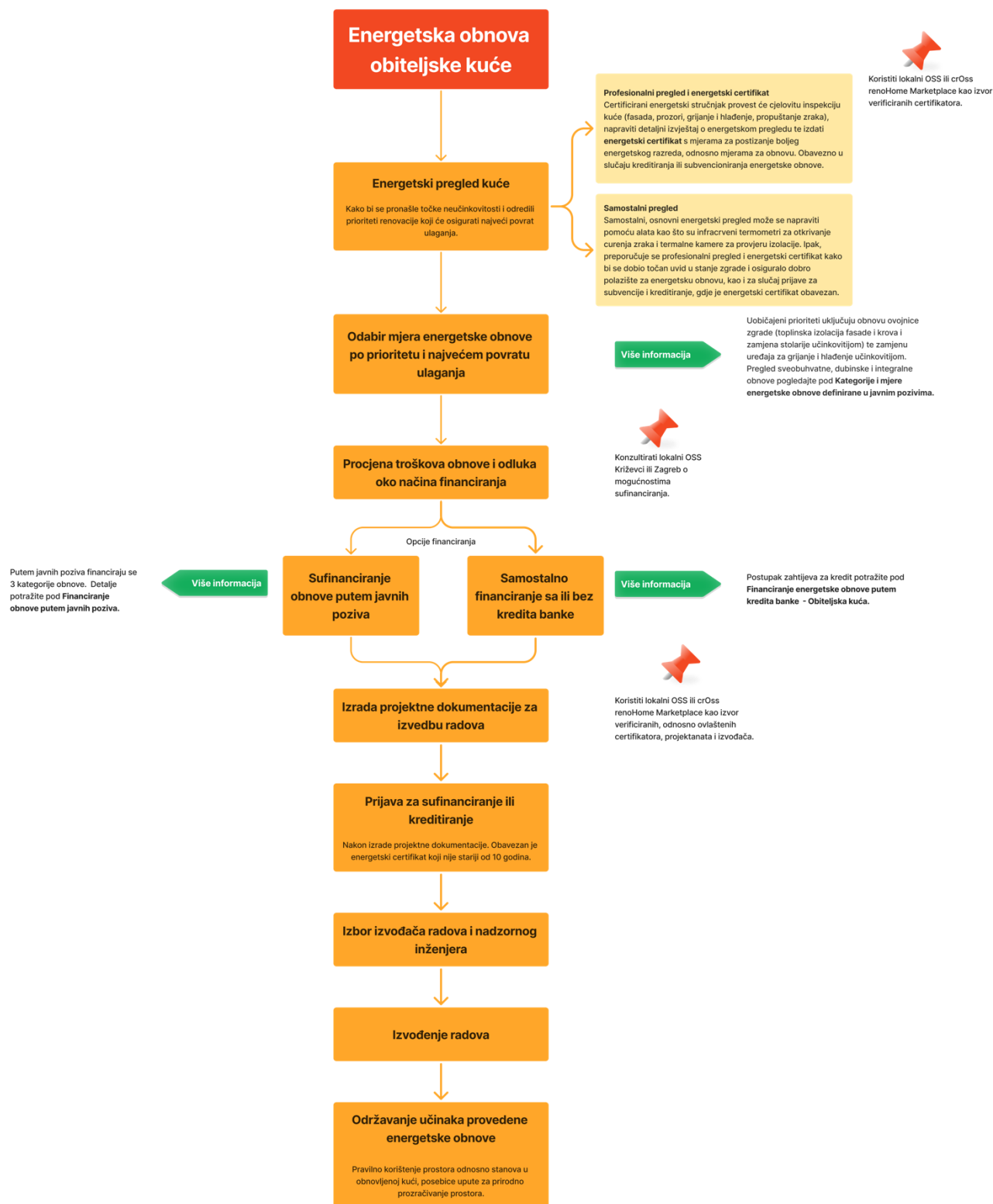


Figure 2: Renovation of single-family homes guidelines' checklist. Created based on the Guide developed as part of the Retrofit HUB project.

Annex 2: Guidelines for the energy renovation of multi-apartment buildings

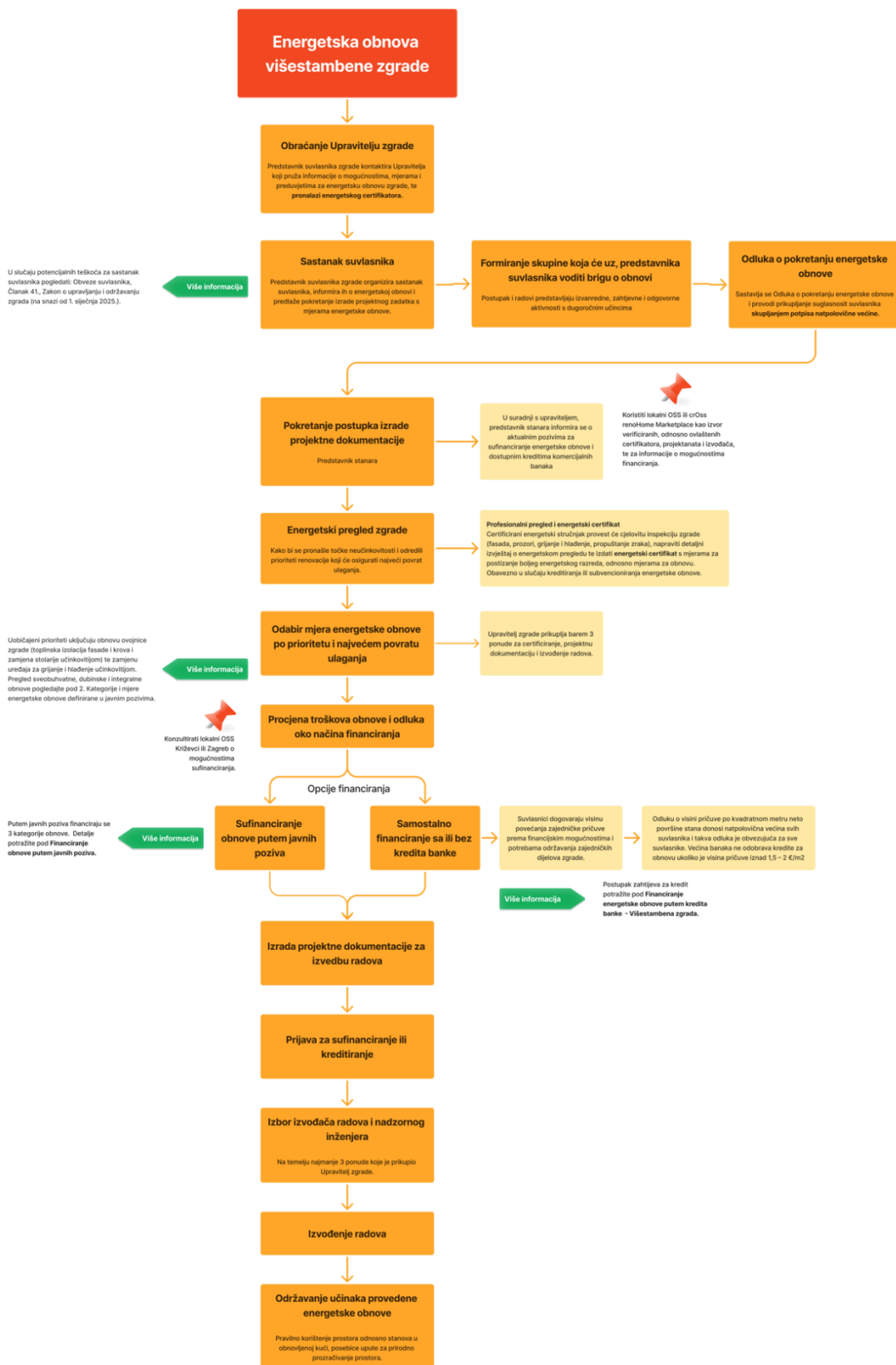


Figure 3: Renovation of multi-apartment buildings guidelines' checklist. Created based on the Guide developed as part of the Retrofit HUB project.

Annex 3: Categories and measures of energy renovation defined in the Croatian public calls

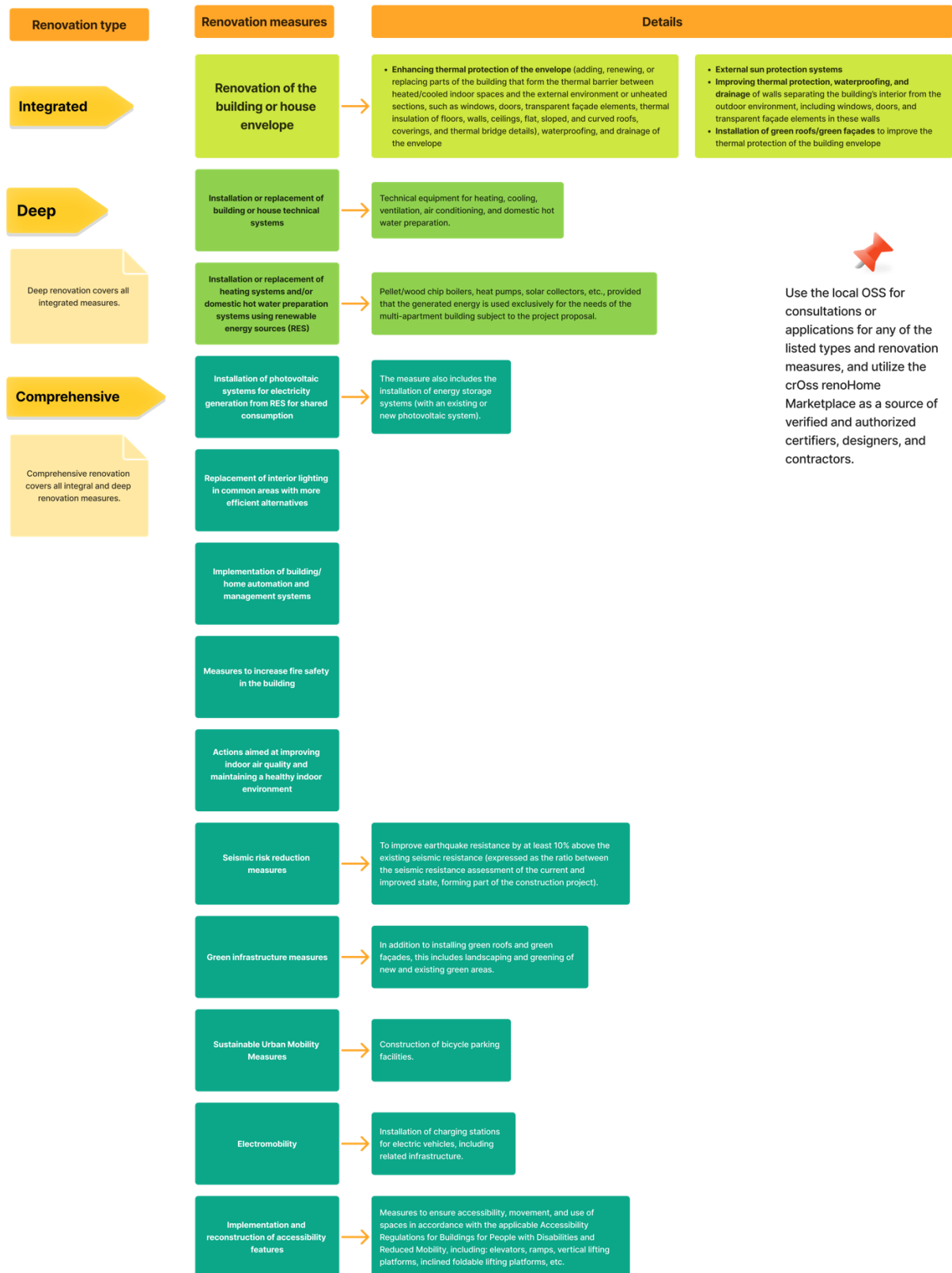


Figure 4: Categories and measures of deep energy renovations as defined by the national Environmental Protection and Energy Efficiency Fund in their public calls for energy renovation of single-family homes and multi-apartment buildings.

Annex 4: Public funding options for deep energy renovation

The Energy Renovation Program until 2030 defines three renovation categories:

- **Integrated energy renovation**
- **Deep energy renovation**
- **Comprehensive energy renovation**

Public calls specify eligible project activities, associated measures, the maximum amount of eligible costs per measure, and the highest possible funding intensity based on the renovation category.

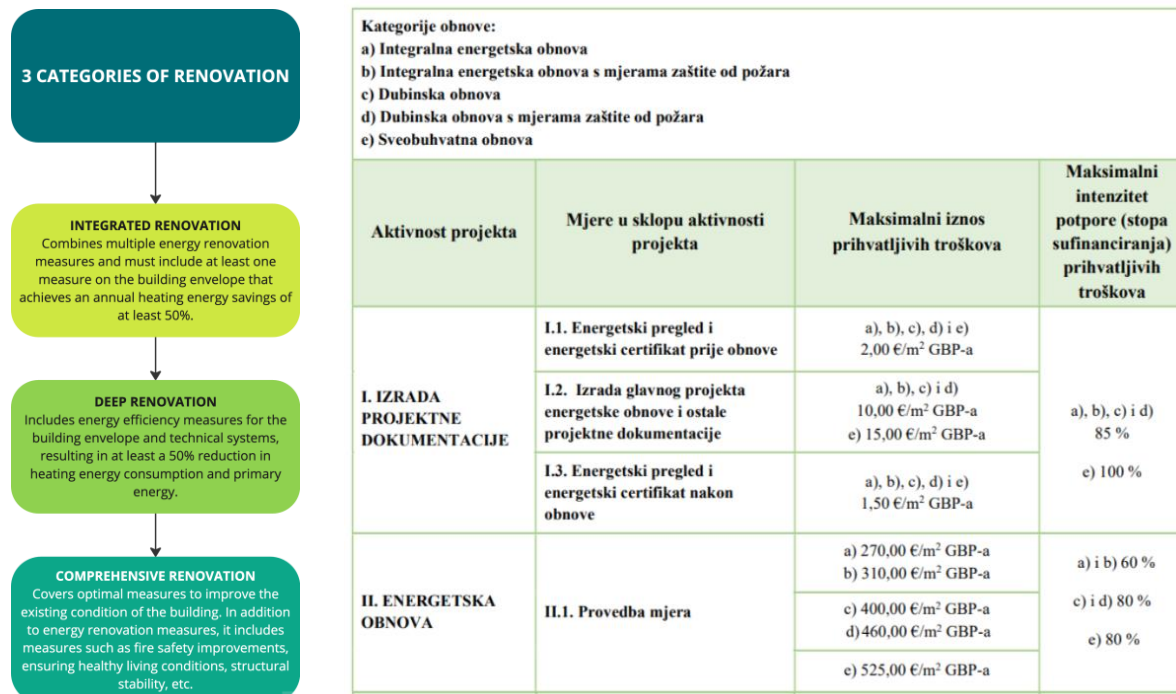


Figure 5: Overview of activities, measures, eligible costs, and maximum support intensity (Source: Call summary; Call for grant allocation; Energy renovation of multi-apartment buildings; Open procedure in the temporary call modality; NPOO.C.7.2.1.01)

Annex 5: Bank loan financing for energy renovation

Multi-apartment building

When interest in renovation arises, the building representative should inform the property manager, who must assess the current condition of the building, including existing documentation and energy certification, evaluate the financial situation, explore public funding options for renovation and investigate potential bank loan opportunities for co-financing.

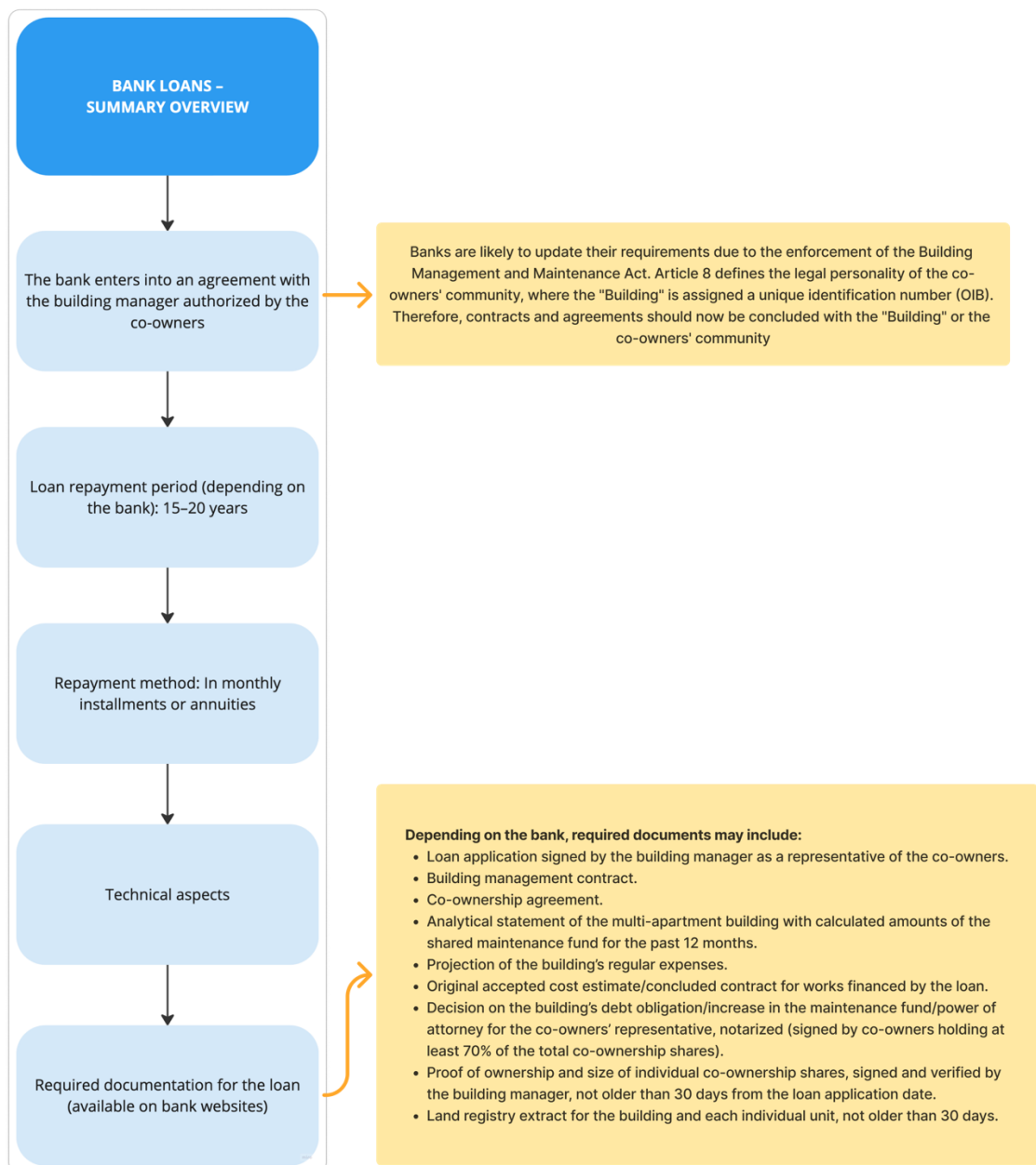


Figure 6: Procedure for obtaining a loan for multi-apartment building owners.

Single-family home

When a homeowner decides to renovate, they should: assess the current condition of their home, including existing documentation and energy certification, evaluate their household's financial situation, explore public funding options for renovation, and investigate potential bank loan opportunities for co-financing.

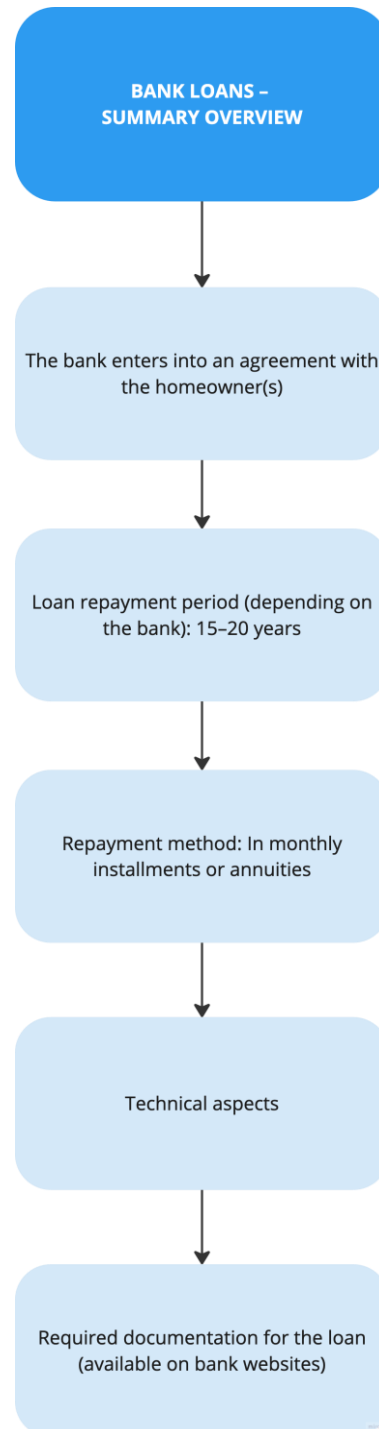


Figure 7: Procedure for obtaining a loan for single-family homeowners.

Annex 6: Glossary of the key terms

API	Application programming interface
BRP	Building renovation passport
EC	European Commission
EED	Energy Efficiency Directive
EPBD	Energy Performance of Buildings Directive
ESCOs	Energy service companies
EPC	Energy performance certificate
EU	European Union
GWP	Global warming potential
IEQ	Indoor environmental quality
LTRS	Long-term renovation strategy
MEPI	Measured energy performance indicator
MEPS	Minimum energy performance standards
NBRP	National building renovation plan
NECP	National energy and climate plan
RED	Renewable Energy Directive
SMEs	Small and medium-sized enterprises
SRI	Smart Readiness Indicator

Figure 8: Glossary taken from the iBRoad2EPC document: Accelerating Deep Renovation in the EU with Renovation Passports, July 2024.

Annex 7: Legislative framework

This annex provides an overview of relevant legal acts at both the European and national levels that form the basis for these guidelines. Given that legislation frequently evolves, it is crucial to monitor updates to ensure the accuracy of the provided information.

Key EU legislation includes

- EPBD 2018/844
- EED directive 2018/2002
- RED 2018/2001
- Renovation wave (area of intervention 6)

Key Croatian legislation includes

- Construction act (nn no. 153/13, 20/17, 39/19, 125/19)
- Energy act (nn no. 120/12, 14/14, 102/15, 68/18)

- - Energy efficiency act (NN no. 127/14, 116/18, 25/20, 32/21, 41/21)
 - a. regulation on the energy efficiency obligation system (NN no. 41/2019)
 - Value added tax act (NN no. 73/13, 99/13, 148/13, 153/13, 143/14, 115/16, 106/18, 121/19, 138/20, 39/22, 113/22, 33/23, 114/23, 35/24)
 - Long-term renovation strategy of the national building stock until 2050 (NN no. 140/2020)
 - Energy renovation program for multi-apartment buildings until 2030 (NN no. 41/2022)
 - Energy poverty mitigation program, including the use of renewable energy sources in residential buildings in assisted and special state concern areas until 2025 (NN no. 143/2021)
 - Energy renovation program for buildings with cultural heritage status until 2030 (NN no. 143/2021)
 - energy renovation program for public sector buildings until 2030 (nn no. 1141/2022)
 - energy renovation program for family houses - in the process of adoption
- Energy development strategy of the Republic of Croatia until 2030 with a view to 2050 (NN no. 25/2020)
- Integrated national energy and climate plan (NECP) for the period 2021-2030
- Low-carbon development strategy of the Republic of Croatia until 2030 with a view to 2050 (NN no. 63/21)
- Energy development strategy of the Republic of Croatia until 2030 with a view to 2050
- National recovery and resilience plan 2021-2026
- Social climate plan - in the process of adoption



crOss renoHome

Croatian One Stop Shop for Integrated Home Renovation



DOOR



GBC

GREEN
BUILDING
COUNCIL
CROATIA