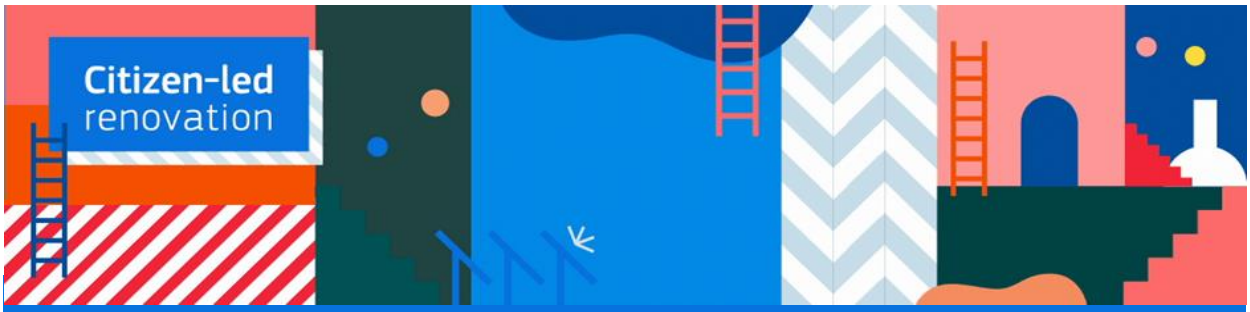

Support service for Citizen-led renovation Projects - Phase II

Practice-Oriented Handbook

Support service for citizens led renovation projects - ENER/2023/OP/0036
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Introduction

This Citizen-led renovation (CLR) Practice-Oriented Handbook has been developed as a resource for stakeholders engaged in community-driven renovation projects across Europe. It brings together the methodologies, experiences, and lessons generated across both phases of the CLR initiative. Phase I (CLR I) introduced the foundational concepts, early pilot activities, and practical approaches for mobilising citizens, establishing initial governance structures, and testing engagement models. Phase II (CLR II) expanded, refined, and strengthened this foundation, integrating new tools, real-world insights from additional pilots, and more advanced advisory frameworks. Together, the two phases form a comprehensive framework for enabling, scaling, and sustaining CLR initiatives.

The handbook emphasises that CLR is not a stand-alone effort, but a collaborative process involving participation from a range of stakeholders. Citizens, local authorities, technical experts, financial institutions, and policymakers all contribute specific expertise, resources, and decision-making capacity to drive renovation forward. Building on Phase I findings, Phase II pilots further refined the CLR approach, with a particular focus on four areas identified as critical for long-term success: expectation management, creating lasting governance and support structures, community building and outreach, and ensuring accessible financial and legal support mechanisms.

Throughout CLR I and CLR II, the initiative developed a comprehensive range of co-created tools and services tailored to the needs of participating pilots. These include technical renovation handbooks, persona-based communication strategies, governance and facilitation models, financial and legal advisory frameworks, digital engagement tools, and peer-learning structures. While many of these tools were initially tested during CLR I, CLR II further refined, expanded, and validated them, ensuring they can be flexibly adapted and replicated across diverse European contexts.

By presenting the roles and responsibilities of CLR stakeholders, synthesising lessons from the Phase II pilots, and outlining practical steps for new initiatives, this handbook aims to:

- Strengthen the foundations of citizen-led renovation projects by providing evidence-based guidance.
- Offer tested and replicable models of governance, financing, and community outreach.
- Ensure that CLR initiatives contribute meaningfully to Europe's climate neutrality and social inclusion objectives.

This is followed by an overview of the co-created tools and services, which were developed with the pilots to address key challenges in CLR implementation. Finally, a practical guide is provided for those involved in CLR initiatives, offering step-by-step recommendations to support successful citizen-led renovation projects.

1. The roles and responsibilities of the CLR stakeholders

The success of Citizen-Led Renovation (CLR) depends on active stakeholder participation, each providing expertise, resources, and support. While CLR's goal - empowering citizens for energy-efficient home renovations - remains constant, stakeholder engagement varies by local context, governance, and community dynamics.

Although the aim of citizen ownership in renovations is consistent, roles and responsibilities depend on local regulations, finances, and socio-economic factors. Phase II pilots demonstrate best practice across a range of key functions: citizen mobilisation, regulatory support, technical delivery, and legal and financial assistance.

CLR depends on collaboration among multiple actors to make projects feasible, inclusive, and sustainable. Each group plays a distinct role in creating the conditions for success.

- **Citizens and community leaders**
  - Act as the driving force behind CLR by initiating demand, setting priorities, and establishing legitimacy for collective renovation projects.
  - Their ability to participate effectively depends on trust-building mechanisms, clear communication, and accessible advisory services.
  - Without these, participation risks being confined to early adopters, undermining inclusivity.
- **Local authorities**
  - Provide political endorsement, simplify regulatory procedures, and align CLR initiatives with broader policy frameworks.
  - Ensure renovation efforts integrate into wider local and regional strategies for energy transition and social inclusion.
  - Evidence from the Rénov-Roue-Rad project shows that in Belgium, citizen-led renovation projects struggle to succeed without municipal or regional authority support.
- **Contractors, technical experts, and service providers**
  - Form the operational backbone of CLR by ensuring technical quality, feasibility, and integration of innovative solutions.
  - In contexts with labour shortages or limited expertise, they train local residents and build long-term capacity.
  - Supported by communication specialists who facilitate group renovations and mobilise communities.
- **Intermediary actors**
  - Include cooperatives, energy communities, and renovation support organisations that connect citizens, experts, and authorities.
  - Translate complex financial, legal, and technical requirements into accessible formats.
  - Provide governance structures that ensure continuity beyond individual projects.

CLR succeeds when these actors work together, combining community engagement, institutional support, technical expertise, and coordination mechanisms. Their collaboration

transforms isolated efforts into integrated strategies for energy transition and social inclusion.

Across both phases, the distribution and balance of roles varied considerably. Some pilots demonstrated strong grassroots mobilisation and community leadership, while others relied more heavily on municipal facilitation or external technical expertise. Despite these differences, the principle of shared responsibility and structured collaboration consistently appeared as a cornerstone of effective citizen-led renovation.

The following tables capture the distribution of roles and responsibilities within the CLR pilots, divided into each of the 6 CLR main pillars. They provide a comparative perspective on how diverse CLR initiatives organised their stakeholder ecosystems, offering practical reference points for communities, municipalities, and practitioners seeking to establish or strengthen their own citizen-led renovation efforts.

CLR main pillars	Energy community leaders	Local authorities	Contractors and technical experts
1. Community mobilisation and engagement	• Mobilised residents through community meetings, peer-to-peer exchanges, and local events. • Built trust by engaging older residents, vulnerable households, and those with limited digital access. • Promoted awareness of renovation benefits, including comfort, cost savings, and collective energy solutions.	• Supported mobilisation by providing venues, communication platforms, and municipal visibility. • Ensured accessible information for all residents, particularly in small or rural communities.	• Participated in community-led events to provide on-site demonstrations and technical advice. • Helped build local engagement by explaining renovation measures in practical terms.
2. Governance, coordination, and facilitation	• Developed shared governance models to guide collective renovation decisions. • Acted as intermediaries between citizens, contractors, and public authorities. • Ensured inclusive participation and transparent communication within the community.	• Provided political support and long-term institutional anchoring for CLR. • Ensured alignment with local climate, housing, and social strategies. • Acted as coordinators with regional and national agencies to integrate technical and financial expertise.	• Supported structured coordination by offering clear renovation pathways and helping residents navigate installation logistics. • Ensured renovation sequencing and technical compatibility across grouped interventions.
3. Regulatory and administrative support	• Supported residents with basic information on regulatory steps and administrative requirements. • Advocated for clear and simplified procedures to reduce barriers for participants.	• Streamlined permit approvals and administrative processes. • Provided regulatory guidance on building codes, heritage constraints, and renovation obligations.	• Ensured compliance with national and EU efficiency standards. • Supported households with understanding technical documentation needed for permits and subsidies.

		• Integrated CLR processes into wider local frameworks to ensure continuity and legal clarity.	
4. Technical expertise, renovation delivery, and capacity building	• Promoted understanding of renovation options via educational workshops and open-home events. • Initiated discussions with residents on appropriate technical and efficiency measures.	• Coordinated with regional energy agencies to bring specialised expertise to the community. • Facilitated assessments for homes requiring sensitive renovation (e.g., heritage buildings).	• Delivered renovation works (e.g., insulation, heating systems, PV installations). • Carried out technical audits and offered tailored retrofit recommendations. • Trained local residents or workers to address skill shortages and build long-term capacity.
5. Financial and legal support	• Disseminated information on financing schemes, subsidies, cooperative models, and cost-saving opportunities. • Promoted transparent communication on financial contributions and expected benefits in collective schemes.	• Coordinated financial support mechanisms, including municipal subsidies and access to national programmes. • Established partnerships with banks and cooperatives to expand affordable financing options. • Facilitated legal recognition of energy communities and cooperatives.	• Provided cost–benefit analyses and technical-economic assessments to help households make informed choices. • Offered models such as cost-sharing for grouped renovations to improve affordability.
6. Monitoring, performance evaluation, and long-term sustainability	• Encouraged peer learning and knowledge exchange to sustain renovation momentum over time. • Promoted community reinvestment models in energy communities.	• Monitored the inclusivity, quality, and progression of CLR initiatives. • Ensured that CLR remained embedded in long-term municipal development strategies.	• Offered ongoing monitoring of energy performance post-renovation. • Provided data on efficiency improvements to support community reporting and shared learning.

2. Resulting CLR approach (Phase I and II)

Across both phases of Citizen-Led Renovation (CLR I and CLR II), the Pilot Projects provided valuable lessons on the challenges and opportunities of implementing citizen-led renovation initiatives in diverse local contexts. Together, the two phases highlight key factors that influence the success of CLR efforts, from expectation management to long-term financial and organisational sustainability.

A recurring theme across all pilots is the importance of structured, long-term support: empowerment does not happen overnight, and community-led renovations require sustained financial, technical, and administrative backing. The pilots also highlighted the need for strong collaboration frameworks, leveraging partnerships with policymakers, financial institutions, and technical experts to facilitate and de-risk the renovation process.

Furthermore, both phases confirmed that engaging communities beyond the usual early adopters is essential for ensuring inclusivity and avoiding social divides in the energy transition. Early adopters often have more time, resources, or motivation than the average household and are therefore less representative of the communities that CLR aims to serve.

This section synthesises insights from the pilots into an approach consisting of four key focus areas:

1. **Expectation management** – Understanding the time, resources, and commitment required for CLR to succeed, while ensuring realistic planning and long-term sustainability.
2. **Creating lasting structures** – Developing governance models, networking platforms, and replicable strategies to support community-driven renovation beyond project timelines.
3. **Community building and outreach** – Implementing effective tools and engagement strategies to expand participation, reach underserved groups, and sustain momentum.
4. **Financial support and resource constraints** – Addressing funding barriers, providing legal and administrative support, and ensuring that financial mechanisms facilitate broad participation. At the intersection of creating lasting structures, we also find the need to develop a long-term financing strategy that supports the community's financial autonomy and assists in identifying new financing sources.

By analysing these insights, stakeholders in future CLR initiatives can anticipate common challenges, adopt proven solutions, and design scalable approaches that align with their specific contexts. The following sections explore these lessons in detail, providing a foundation for strengthening and expanding citizen-led renovation efforts across Europe.

2.1 Expectation management

Effective citizen-led renovation relies on setting clear and achievable expectations. Both CLR I and CLR II confirmed that empowerment develops gradually rather than being a single

event. CLR I highlighted the initial enthusiasm and requirements placed on communities, while CLR II

demonstrated that ongoing capacity-building and tangible follow-up, such as face-to-face meetings between citizens and local authorities, regular newsletters, and engagement activities for community members, are essential to sustain momentum over time.

Empowerment in CLR occurs at various levels and necessitates a clear understanding of its scope. Communities are expected to oversee renovation processes, understand project management, and navigate financial and legal frameworks. These skills take time, training, and structured support to develop. Experience from both phases indicates that broad-scale empowerment within a typical two-year support period is unrealistic. Instead, initiatives should focus on establishing structured pathways that allow communities to grow their capacity over time, with progress continuing beyond formal project support.

Although several energy communities existed before the CLR pilots, empowerment remained a slow process. Raising awareness of renovation benefits, involving residents in decision-making, and providing technical and financial guidance required continuous effort. Tracking actual renovation uptake proved challenging in both phases, emphasising the need for persistent outreach, reliable data, and follow-up strategies. Therefore, successful CLR initiatives establish mechanisms for continuous engagement and follow-up, and awareness-raising activities are linked to sustained advisory services and practical support.

Experiences from the pilots illustrate these dynamics:

- In **TRIPLE SEC (Ireland)**, raising awareness and engaging households was a lengthy process due to skilled labour shortages and complex administrative procedures for funding. Community-led initiatives such as walk-and-talk events and pop-up energy shops were instrumental in sparking interest, but maintaining long-term commitment from residents remained difficult.
- In **Coopérnico (Portugal)**, providing legal and financial guidance to communities seeking to install solar PV systems required sustained effort. Securing commercial offers from PV installers was a lengthy process that demanded continuous follow-up and patience. Despite expert support, financial constraints often delayed installations.
- **IZGREI (Bulgaria)** also faced difficulties in maintaining long-term participation. Workshops and advisory sessions helped initiate discussions on energy renovations, but sustaining commitment and tracking actual implementation remained a persistent challenge.
- **ZuidtrAnt (Belgium)** used open home showcases and walk-and-talk tours to spark interest in energy renovations, coupling these activities with technical and financial guidance to support decision-making.

These examples demonstrate that sustainable structures, not short-term interventions, are essential for lasting engagement. Practical steps include developing long-term advisory frameworks, community-driven governance models, and ongoing financial and technical assistance to support CLR initiatives beyond individual project cycles.

Two key dimensions of expectation management stand out:

1. **Setting realistic expectations about duration, budget, and capacities of support:**

    - The pilots highlighted the importance of aligning project timelines, resources, and stakeholder commitments with realistic long-term goals. Projects supporting such initiatives are usually shorter than the time needed to achieve all planned outcomes, particularly given the length of data-gathering and permitting processes. Expectations should be defined in a way that captures intermediate achievements and recognises the incremental nature of progress. Support must align with the project timeline and cover its lifespan to ensure successful empowerment.
    - For example, in **TRIPLE SEC**, the process was significantly delayed due to difficulties in gathering reliable building data, which was crucial for defining different renovation scenarios. The absence of accurate baseline information slowed planning and decision-making, highlighting the need for a more structured approach to data collection from the outset.
    - In **Coopérnico**, the cooperative struggled to sustain long-term engagement among community members due to uncertainties about financial incentives and regulatory support.
    - In **Diputació de Girona (Spain)**, aligning municipal subsidies with national schemes helped citizens understand funding opportunities, but also exposed the risks of miscommunication when financial incentives are uncertain.

2. **Ensure continuity after the formal support period ends.**

    - During CLR I and CLR II, objectives, activities, and timelines were defined at the outset, and the pilots, supported by the CLR consortium, made significant efforts to meet these goals. However, sustaining momentum beyond the official project period remains a significant challenge. Several pilots provide guidance on pursuing continuity.
    - In **Antrodoco (Italy)**, CLR activities were embedded in the renewable energy cooperative, enabling reinvestment of revenues into ongoing renovations.
    - In **Postua and Guardabosone (Italy)**, continuity was supported through municipal assemblies that provided ongoing support to citizens.
    - In **Alsómocsolád (Hungary)**, the municipality integrated CLR into local development strategies to ensure long-term viability, even in a rural context with limited resources.
    - By contrast, in **TRIPLE SEC**, as a voluntary energy community, board members may not have the capacity to sustain their efforts due to professional and personal commitments.
    - In **IZGREI**, resistance to renovation efforts stemmed from distrust in public funding mechanisms and a lack of clear information on renovation benefits. Ensuring continuity, therefore, requires strong governance structures, clear leadership succession plans, and continued access to financial and technical assistance.

2.2 Focus on creating structures that last

For citizen-led renovation to move from short-term projects to long-term transformation, initiatives need to be embedded in durable structures. CLR I began by testing formats, alliances, and first-generation governance arrangements. CLR II built on this by consolidating governance models, strengthening collaboration platforms, and clarifying how these structures can endure beyond project funding.

Temporary activities can raise awareness, but lasting citizen empowerment depends on stable governance, collaborative networks, and replicable strategies. CLR initiatives should focus on forming partnerships, creating scalable solutions, and raising visibility to turn renovation into a continuous and growing movement. Additionally, supporting the creation of robust legal entities is essential, as they are often required for access to funding and formal agreements.

Key lessons include:

Strengthen collaboration and networking platforms.

- Building strong partnerships between energy communities, cooperatives, policymakers, and financial institutions facilitates knowledge sharing and resource mobilisation. Across CLR I and CLR II, the pilots demonstrated the benefits of structured collaboration through workshops, joint events, and advisory services.
- In **TRIPLE SEC**, collaboration with local authorities supported navigation of regulatory hurdles and access to funding. In **Coopérnico**, partnerships with financial institutions were essential for securing innovative financing solutions for collective PV installations. In **IZGREI**, cooperation with municipal bodies helped streamline the legal framework for recognising and supporting energy communities. From CLR II, **Diputació de Girona** created synergies with regional subsidy programmes, while **Castello Green House** used cooperative structures to connect citizens, municipalities, and banks.

Develop scalable and replicable models.

- Successful approaches demonstrated in CLR I and subsequently refined in CLR II should be adapted and expanded to other communities.
- In **TRIPLE SEC**, a structured approach to data collection and partnerships with local authorities enabled the development of replicable retrofitting strategies for similar housing types. In contrast, local advisory groups helped maintain engagement beyond the project timeline. In **Coopérnico**, the community-driven cooperative model allowed households to jointly invest in PV systems, reducing financial burdens and increasing participation. **IZGREI** effectively addressed regulatory complexities through municipal collaboration, showing how policy advocacy and legal support can enhance the viability of energy communities. **ENERGENT** demonstrated that group renovation offers can significantly improve participation rates by streamlining access to contractors and funding. CLR II extended this logic: **ZuidtrAnt** implemented a one-stop-shop model to facilitate support for households, while **Alsómocsolád** explored rural-scale approaches that can be adapted to similar small municipalities.

Increase visibility and communicate successes.

- Effective communication strategies – such as social media campaigns, local events, and community showcases – raise awareness and attract new participants. Engaging key community figures, municipal leaders, and policymakers further amplifies these efforts.
- As Ciarán Cuffe, Irish MEP and member of the Enablers Board, highlighted, continuous communication is essential to ensure that citizen-led renovation becomes a widely recognised and discussed concept. Identifying "amplifiers" within communities helps build momentum.
- In **TRIPLE SEC**, collaboration with local authorities and visible community advocates increased participation in renovation programmes. **Coopérnico** leveraged municipal partnerships to expand communication beyond early adopters. In **IZGREI**, involving influential community figures enhanced renovation awareness and encouraged broader participation. **ENERGENT** successfully used targeted digital tools and persona-based engagement strategies to reach underserved groups and strengthen community networks. **ZuidtrAnt** used visible local ambassadors to mobilise residents, while **Antrodoco** and **Postua/Guardabosone** relied on municipal leaders as trusted messengers in small communities.

2.3 Community building and reaching out

Successful citizen-led renovation relies on trust, visibility, and engagement. CLR I and CLR II showed that while financial and technical tools are vital, the key is people's willingness and ability to participate. CLR efforts should prioritise building relationships with residents, integrating activities into neighbourhood life, and including groups that might otherwise be excluded.

The pilots developed and refined a range of tools and approaches:

Use effective tools to engage communities.

Across CLR I and CLR II, initiatives created tools for information sharing, technical support, and community engagement:

- *Information and guidance:* The OSS platform centralised resources, making renovation support more accessible. **ENERGENT (Belgium, CLR I)** created a technical and financial advice hub that provided clear, centralised information.
- *Technical support:* **TRIPLE SEC (Ireland, CLR I)** created tailored guidebooks addressing different housing renovation needs (e.g. *Warmer Cheaper Concrete Homes in Cabra*). **IZGREI (Bulgaria, CLR I)** designed step-by-step toolkits explaining retrofitting techniques and funding options in plain language. **Diputació de Girona (Spain, CLR II)** provided households with structured retrofitting guidelines and advisory services, aligning municipal and national support schemes to simplify decision-making.
- *Community engagement:* Persona tools were used in **ENERGENT** and **ZuidtrAnt** to customise outreach strategies for different community segments. Websites and

social media played a key role in broadening visibility. **Alsómocsolád (Hungary, CLR II)** produced a community video to showcase local renovation experiences, providing a relatable and engaging tool for inspiring participation in small rural communities. An overview of the tools created by the CLR I and CLR II projects is provided in Section 3.

Going into the neighbourhood.

Direct, local engagement is essential to build trust, facilitate dialogue, and create visible momentum for renovations. Both phases showed that CLR initiatives benefit from moving beyond centralised offices or purely online platforms by embedding activities directly in neighbourhoods. Examples include:

- *Door-to-door outreach and participatory workshops.* Personal contact helps ensure that households feel included and supported. **IZGREI (Bulgaria, CLR I)** organised workshops and advisory sessions in neighbourhood venues to initiate conversations on energy retrofits. **Alsómocsolád (Hungary, CLR II)** relied on face-to-face engagement led by municipal staff to reach households in a small rural setting.
- *Social and community events.* Informal gatherings create opportunities for residents to share experiences and learn from peers. **TRIPLE SEC (Ireland, CLR I)** organised community events that encouraged informal discussions on energy efficiency. **Postua and Guardabosone (Italy, CLR I)** held municipal assemblies that acted as trusted community forums for renovation discussions.
- *Open house visits.* Allowing households to see real-life renovation projects helps demystify the process and illustrate tangible benefits. **TRIPLE SEC (Ireland, CLR I)** hosted open-house events where participants could view successful retrofits firsthand. **ZuidtrAnt (Belgium, CLR II)** arranged walk-and-talk tours where residents visited renovated homes and discussed solutions with neighbours.
- *Pop-up information points.* Temporary local shops or stands provide easy access to advice and consultations in familiar settings. **TRIPLE SEC (Ireland, CLR I)** established pop-up energy shops in accessible locations within communities.
- *Workshops and advisory sessions.* Structured events helped citizens understand the renovation steps and funding opportunities. **IZGREI (Bulgaria, CLR I)** held workshops and advisory sessions to raise awareness of retrofitting options and subsidies. **Diputació de Girona (Spain, CLR II)** organised local advisory meetings embedded within municipal structures to connect citizens to available financial support.

Going beyond the "usual suspects".

Expanding outreach beyond early adopters and already engaged homeowners was a recurrent challenge in both CLR I and CLR II. The pilots highlighted the need to target underserved groups – those without the time, resources, or access to renovation support. These communities often lack awareness of available programmes and face barriers accessing financial incentives, leading to broader social consequences such as disengagement from sustainability efforts. If these groups are not included, there is a risk that renovation support may disproportionately benefit more privileged households, exacerbating social divisions. Addressing these disparities is essential to maintaining social

cohesion and ensuring broad participation in the transition. Different strategies emerged:

- *Neighbourhood-based engagement.* Outreach methods that physically brought renovation discussions into communities proved effective in reaching a wider audience. **TRIPLE SEC (Ireland, CLR I)** used walk-and-talk events to move beyond established circles and connect with diverse residents.
- *Targeted support for vulnerable households.* Dedicated schemes helped households with fewer resources participate in renovation efforts. In Ireland, the *Warmer Homes Scheme*, promoted through **TRIPLE SEC**, enabled vulnerable households to access energy-efficient upgrades at little or no cost.
- *Addressing barriers linked to awareness and trust.* In some contexts, limited knowledge and financial constraints restricted participation. **IZGREI (Bulgaria, CLR I)** found that despite workshops and advisory sessions, many households did not proceed with renovations due to lack of awareness of subsidies and low confidence in public funding mechanisms.
- *Leveraging local networks.* To expand outreach, pilots relied on trusted intermediaries and community anchors. **ZuidtrAnt (Belgium, CLR II)** partnered with local clubs and associations to broaden participation beyond typical early adopters. **Alsómocsolád (Hungary, CLR II)** relied on the credibility of municipal leaders in a small rural setting to reach disengaged groups.

2.4 Financial support and resource constraints

Both CLR I and CLR II confirmed that financial and resource constraints are among the most significant barriers to citizen-led renovation. While CLR I made the scale of these challenges visible, CLR II explored and tested more structured financial and organisational responses.

Key lessons include:

Improve access to funding.

Financial constraints remain a central barrier for many households and communities. Across both phases, pilots highlighted the effectiveness of mechanisms such as revolving funds, collective purchasing, and microfinancing in making renovations more affordable, alongside grants and subsidies that are particularly important for vulnerable groups.

- In **TRIPLE SEC**, securing funding for deep retrofits was a major challenge, limiting the scope of works that could be implemented.
- In **Coopérnico**, financial limitations delayed solar PV installations, even when community interest and technical feasibility were present.
- In **IZGREI**, many households were unaware of available subsidies, highlighting the need for improved outreach and simplified application processes.
- In **Diputació de Girona**, complementary instruments such as crowdfunding were explored to allow citizens to co-finance smaller renovation measures and raise local awareness, while traditional subsidies and loans were being arranged.

Ensure dedicated staff for long-term impact.

The presence of dedicated coordinators and technical advisors significantly improved the success of CLR initiatives in both phases. Ensuring funding for expert guidance and administrative support enhances efficiency and reduces the burden on volunteers.

- This was particularly important for **TRIPLE SEC**, where volunteers played a crucial role in implementing various activities and faced time constraints.
- **ZuidtrAnt** demonstrated the value of professional staff operating through its one-stop-shop, which provided ongoing technical and financial guidance.
- In **Diputació de Girona**, technical advisors were embedded within municipal structures, ensuring continuity and alignment with local subsidy programmes.

Address legal and regulatory barriers.

Legal and regulatory constraints, including unclear rules and complex administrative processes, slowed progress in several pilots across CLR I and CLR II.

- In **TRIPLE SEC**, unclear rules on liability meant that energy communities often remained in advisory roles instead of taking more direct action, illustrating the need for clearer regulations on responsibilities.
- In **Coopérnico**, challenges arose in defining legal frameworks for collective self-consumption, as existing regulations did not fully support cooperative energy-sharing models. Addressing these barriers required advocacy efforts and legal assistance to update statutes and qualify as energy communities under national legislation.
- In **IZGREI**, the absence of clear legal recognition for CLR initiatives complicated efforts to access public funding and subsidies. Legal training sessions and workshops helped local stakeholders better understand regulatory compliance and strengthen their case for policy adaptation. Providing legal assistance for adapting statutes to qualify as energy communities, and ensuring compliance with regulatory requirements, remains critical to sustaining community-driven renovation projects and expanding their impact.
- In **Antrodoco**, CLR activities were embedded within an established renewable energy cooperative, demonstrating how existing legal structures can provide recognition, stability, and access to funding.

3. Tools and services provided during the CLR initiative (both Phase I and II)

This section summarises the main types of support, tools, and services co-created during the Citizen-Led Renovation (CLR) initiative across Phases I and II. Instead of listing activities by pilot, services are grouped by function. Examples show where tools or services were developed and applied, demonstrating how they can be adapted and replicated elsewhere.

The main categories are:

- Technical Support & Renovation Guidance
- Financing Guidance & Funding Solutions
- Regulatory & Legal Support
- Business Case Development & Evaluation
- Communication & Engagement Activities

The aim is to offer a transferable catalogue of resources for municipalities, energy communities, and citizen groups to adapt. Each subsection details tools, clarifying their purpose, content, development, and role in citizen-led renovation.

3.1 Technical Support & Renovation Guidance

Retrofitting Guide for Girona Provincial Council, Spain

The Girona Retrofitting Guideline has been developed and applied in Girona (Spain) within the CLR initiative, developed by IEECP, providing an inclusive and practical resource for the sustainable renovation of representative housing typologies in the city and broader region. The document reflects collaboration among technical experts, municipalities, and local stakeholders to provide comprehensive technical support and financial feasibility assessments for a wide range of retrofitting solutions. It is designed not only as a technical manual but also as a social roadmap, ensuring that renovation is carried out in ways that are affordable, participatory, and respectful of community needs.

The guideline is centred on three common building types in Girona: modest **1950s social housing blocks**, **historic masonry houses**, and **multi-family buildings from the 1960s–70s**. For each of these, a carefully developed set of recommendations provides guidance in two main areas:

- **Technical aspects of renovations**: including insulation strategies, efficient glazing, ventilation upgrades, heating and cooling systems such as heat pumps, renewable energy integration, and accessibility improvements (e.g. lift installations in apartment blocks).
- **Financial and social aspects of renovations**: covering budgeting, subsidy opportunities (OMH, Next Generation EU, G-Domus), cost-benefit scenarios, and measures to safeguard affordability and tenant rights while preventing renoviction.

Here is a more detailed breakdown of the key elements included in the document:

Building description and assessments

- **1950s social housing**: Typically, modest blocks with thin walls and poor insulation. The guideline identifies measures such as external wall insulation, window replacement, and roof improvements to tackle high energy losses.
- **Historic centre homes**: Traditional stone or brick houses with heritage value but poor thermal performance. Recommendations include internal insulation with breathable materials, careful preservation of façades, and improved ventilation systems to maintain comfort while respecting cultural identity.
- **1960s–70s multi-family buildings**: Larger apartment blocks with outdated heating systems and poor accessibility. Retrofit strategies include façade insulation, central heating upgrades with heat pumps, photovoltaic systems for collective use, and accessibility measures such as lift installations.

Grant opportunities and recommendations

- **Subsidy mapping**: The guideline outlines available financial instruments and grants, including municipal renovation aid, national and EU-level funds, and specific regional programmes.
- **Expert guidance**: Recommendations are informed by architects, engineers, and energy advisors, ensuring that both technical soundness and affordability are addressed in parallel.

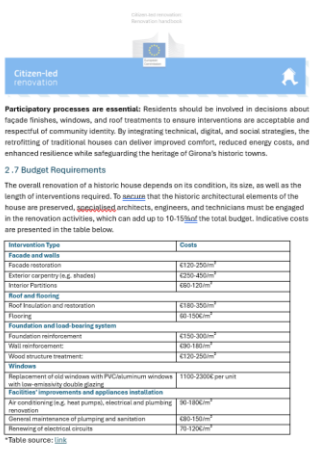
Retrofit scenarios

- **Scenario 1**: Initial improvements such as attic insulation, roof sealing, or basic window replacement, aimed at reducing heat loss while keeping investment manageable.
- **Scenario 2**: Builds on the first by adding more advanced measures, such as façade insulation, higher-performance glazing, and controlled ventilation systems, balancing energy efficiency with improved indoor comfort.
- **Scenario 3**: A deep renovation pathway that introduces renewable energy technologies (heat pumps, photovoltaic systems), full insulation of roofs and façades, smart monitoring, and accessibility features for ageing or vulnerable residents.

Technical, financial, and social support

- **Advisory services**: The guideline highlights the importance of consulting professionals for technical design, financial planning, and social support during the renovation process.
- **Financial analysis**: Cost ranges, potential savings, and payback periods are outlined to help households and communities plan their investments with greater certainty.
- **Social safeguards**: The guideline stresses inclusion by addressing affordability, preventing displacement, and encouraging participatory approaches that give residents a voice in decision-making.

Overall, the Girona Retrofitting Guideline functions as a vital resource for homeowners, municipalities, and energy communities, providing them with a structured and inclusive approach to renovation. By balancing technical precision with financial feasibility and social safeguards, it ensures that retrofitting in Girona contributes not only to energy efficiency and sustainability but also to affordability, wellbeing, and long-term community resilience.



Session on Energy Auditing for Girona Provincial Council, Spain

This training session on energy auditing was developed and delivered within the CLR initiative to strengthen the technical capacity of Girona Provincial Council in planning and implementing renovation programmes. Energy auditing is a foundational step in any renovation process, as it allows municipalities and communities to understand the baseline performance of their buildings and to identify tailored interventions based on real data. The session was designed as a practical, accessible, and highly actionable introduction to the audit process, enabling local actors to interpret findings and incorporate them into renovation roadmaps confidently.

The session provided a structured overview of three key areas:

Understanding the purpose and process of energy audits

- Explanation of why energy audits are essential for identifying inefficiencies in building envelopes and systems.
- Overview of typical audit stages, including data collection, site inspection, and diagnostic measurements.
- Introduction to standard auditing tools and methodologies used across Europe.

Diagnostic indicators and technical interpretation

- Heat-loss pathways (roof, external walls, floors, windows) and how they affect comfort and energy bills.
- Airtightness, thermal bridges, and ventilation performance as central diagnostic themes.
- Guidance on identifying priority renovations based on building typologies and household needs.

Translating audit results into renovation planning

- Methods for linking audit findings to renovation scenarios, including basic, medium-range, and deep upgrades.
- Examples of using audit data to build cost–benefit analyses and communicate options to residents.

- Discussion of how audit-based decision-making can support subsidy applications and eligibility assessments.

Overall, the energy auditing session was vital for Girona Provincial Council, equipping staff with knowledge for evidence-based renovation strategies. Grounding decisions in measurable data, the session boosted local capacity, ensured transparent communication, and aligned planning with technical and financial needs. Its format is replicable for any municipality aiming to incorporate energy audits into renovation support.

Renovation Guide for the Municipality of Alsómocsolád, Hungary

The Renovation Guide developed for the Municipality of Alsómocsolád was designed specifically around the **Kádár-kocka ("Kádár Cube")**, the most common detached house typology built in Hungary between the 1960s and 1980s. These homes are widespread in rural areas and are known for their poor energy performance, under-insulated structures, outdated heating systems, and high operating costs. Within the wider CLR support service, this guide provided a tailored, highly contextualised renovation framework adapted to the needs of an ageing population, households with limited financial resources, and communities with low technical literacy.

The guide addresses three core dimensions of renovation for Kádár-kocka homes:

1. Building Characterisation and Energy Weaknesses
The guide begins by mapping the distinctive structural and thermal characteristics of the Kádár-kocka, highlighting key heat-loss pathways and common renovation challenges. These include:

- **Uninsulated or minimally insulated walls**, typically single-layer brick or block masonry with high thermal transmittance.
- **Poorly insulated attics**, often with deteriorated or insufficient attic insulation.
- **Old, inefficient wooden windows**, frequently without proper sealing or double glazing.
- **Outdated heating systems**, especially mixed-fuel or wood-burning stoves, creating discomfort and inefficient energy use.
- **Ventilation issues** leading to condensation and mould when partial renovations are performed without proper planning.

This diagnostic foundation allows households to understand where interventions will have the most significant impact.

2. Progressive Renovation Pathways for the Kádár-kocka Typology
The guide offers clear, accessible scenarios that align with the financial and practical capacities of rural households. Each pathway builds on the previous one, enabling flexible progress:

- **Scenario 1 – Low-cost improvements**: draught-proofing, attic insulation upgrades, basic stove replacement, pipe insulation, and sealing of critical thermal bridges.
- **Scenario 2 – Intermediate renovation measures**: external wall insulation using breathable systems suitable for older masonry, installation of energy-efficient windows, mechanical ventilation options, and improved heating distribution systems.

- **Scenario 3 – Deep renovation**: full building-envelope insulation, transition to heat pumps or high-efficiency boilers, integration of rooftop photovoltaic systems, and smart energy monitoring for ongoing optimisation.

These scenarios were structured to show cost ranges, typical savings, and comfort improvements, supporting realistic planning by households and the municipality.

3. Social and Financial Accessibility for Rural and Elderly Residents

Given the demographic characteristics of Alsómocsolád, with many elderly homeowners and residents on fixed incomes, the guide places strong emphasis on accessibility and tailored support:

- **Step-by-step explanations** avoiding technical jargon, enabling residents with limited renovation experience to make informed decisions.
- **Clear descriptions of subsidies and financial programmes**, including national schemes supporting energy upgrades and programmes for collective renovation.
- **Collective renovation opportunities**, showing how groups of neighbours can coordinate interventions to reduce costs, share contractors, and increase subsidy eligibility.
- **Support structures for vulnerable households**, addressing behavioural barriers, trust gaps, and decision-making challenges often present in rural contexts.

Value and replicability

The Alsómocsolád Renovation Guide demonstrates how renovation support can be adapted to the structural characteristics of the **Kádár Cube** and the socio-economic realities of rural Hungary. By combining technical clarity, accessibility, and social considerations, the guide empowers households to begin and sustain the renovation process. Its typology-specific methodology makes it a strong candidate for replication across hundreds of Hungarian municipalities where Kádár-kocka homes form the backbone of local housing stock.

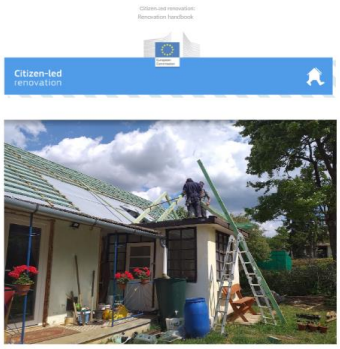


Figure 6. Renovation practices of a house following the local typology.

Figure 3. The EPC certificate of the community's pilot house.

How-to guides and step-by-step renovation support

Core CLR How-to Guides

Across CLR I and CLR II, the **"How-to Guide for Citizen-Led Renovations"** emerged as a central tool, translating complex renovation processes into accessible, step-by-step instructions.

- The guide was first developed and tested with **IZGREI (Bulgaria, CLR I)**, where it covered financing options, legal aspects (regulations, property rights, liability), and technical measures (insulation, materials, contractor selection), illustrated with real-life case studies.
- It was subsequently replicated and adapted for **Postua and Guardabosone (Italy, CLR II)**, where national conditions (e.g. Superbonus 110% and regional schemes), local housing typologies, and seismic considerations were integrated.

The **IZGREI** (Pilot in CLR Phase I) **How-to Guide** for Citizen-Led Renovation (CLR) in Bulgaria is a **practical roadmap** designed to support communities in initiating and managing CLR projects. Developed as part of the IZGREI pilot, the guide compiles key lessons learned, best practices, and step-by-step instructions to help citizens navigate the **complex process of building renovation**.

The guide covers essential topics such as **financing options**, including available subsidies, cooperative funding mechanisms, and strategies for reducing upfront costs. It also provides **legal guidance**, helping communities understand regulations, property rights, and liability concerns. A significant part of the guide is dedicated to **technical aspects**, offering insights on energy efficiency upgrades, insulation techniques, and best practices for selecting materials and contractors.

Additionally, the guide features **real-life case studies** that illustrate successful CLR projects and demonstrate the impact of collective citizen action. By equipping communities with clear, actionable steps, the IZGREI How-to Guide aims to **empower residents to take control of their building renovations**, fostering a culture of sustainability and energy efficiency across Bulgaria.

The **replication** of the **"How-to Guide for Citizen-Led Renovations"** developed and applied in the municipalities of **Postua and Guardabosone** (Italy), is a practical resource designed to support households and local actors in planning and implementing sustainable renovations. Initially developed in earlier phases of CLR, the guide was adapted to the Italian context, taking into account local housing typologies, regulatory frameworks, and financial mechanisms. This replication ensured that residents and municipalities had access to tailored, step-by-step instructions for making their homes more energy-efficient, affordable, and comfortable.

The adaptation of the guide emphasized two complementary aspects:

- **Technical aspects**: offering guidance on retrofitting measures relevant to Italian housing stock, such as roof and wall insulation, efficient glazing, renewable integration, and seismic resilience measures often needed in older rural buildings.
- **Digital aspects**: integrating digital tools such as online checklists, renovation planning dashboards, and user-friendly calculators to help households visualise potential improvements, costs, and savings.

Here is a more detailed breakdown of the key elements included in the Italian replication:

Building description and assessments

- **Local typologies**: The guide reflects the characteristics of small-town housing in Postua and Guardabosone, including stone and brick houses with limited insulation, and multi-family homes that require collective decision-making for retrofits.
- **Condition assessments**: The tool encourages residents to perform basic self-assessments, supported by technical advisors where available, identifying priority interventions to address energy losses and structural needs.
- **Energy potential**: The use of digital energy rating tools was promoted, helping households understand how interventions could shift their homes from low to higher performance levels.

Digital tools and recommendations

- **Interactive guide**: The replication included an online version of the "How-to Guide" with clickable sections and digital diagrams.
- **Dashboards**: Simple data-visualisation tools helped residents and municipalities to monitor energy use, assess costs, and compare retrofit scenarios.

- **Community access**: The digital format also made the resource easier to share across neighbouring municipalities, increasing uptake beyond Postua and Guardabosone.

Application scenarios

- **Scenario 1**: Low-cost measures such as basic insulation, draught-proofing, and simple heating upgrades.
- **Scenario 2**: More substantial interventions, including façade insulation, high-efficiency windows, and controlled ventilation systems.
- **Scenario 3**: Deep renovation pathways, combining renewable heating (e.g. heat pumps), photovoltaic generation, and smart monitoring, ensuring both efficiency and resilience.

Social and financial support

- **Financial guidance**: The Italian replication contextualised available funding sources, including national incentives such as the *Superbonus 110%* and regional grants, making the guide relevant and actionable.
- **Community involvement**: Local workshops and training sessions ensured that households were not only informed but actively engaged in learning how to apply the guide and digital tools to their own homes.

Overall, the replication of the "How-to Guide" in Postua and Guardabosone demonstrates how CLR tools can be **adapted to national realities while retaining their inclusive and citizen-centred spirit**. By combining step-by-step technical guidance with digital tools and tailored financial advice, the initiative provided Italian households with a clear and accessible pathway to renovation. This approach strengthens the role of small municipalities in leading by example and ensures that energy-efficient renovation is within reach for communities across rural Italy.

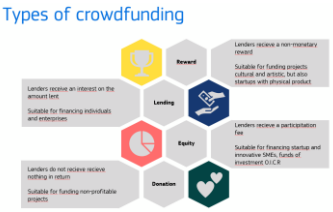
3.2 Financing Guidance & Funding Solutions

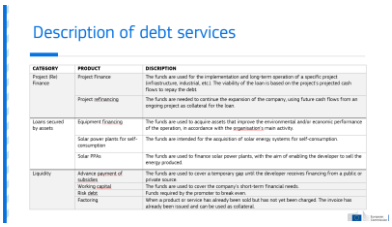
Crowdfunding as a financing tool for citizen-led renovations

Crowdfunding emerged within the CLR initiative as a complementary and democratic financing tool alongside traditional subsidies and cooperative investments. It was first tested in **CLR Phase I** with **Coopérnico (Portugal)**, where the GoParity impact finance platform was used to support community-scale solar and renovation projects through citizen investment, and was later replicated and further demonstrated in **CLR Phase II** with the **Antrodoco energy community (Italy)**.

The **GoParity model**, as presented in the dedicated 'Crowdfunding for CLR and Promoter' presentations, enables **many small investors** to collectively finance energy renovation projects through regulated EU-licensed platforms. It connects citizens, cooperatives, and municipalities seeking sustainable financing with individuals and organisations wishing to invest responsibly. Each campaign is structured in distinct steps: project definition and risk analysis, platform registration, legal validation, campaign preparation and promotion, and loan management. Once launched, investments are gathered transparently through the online interface, with contributors able to track project progress and repayments in real time.

Crowdfunding thus represents a **replicable tool** for scaling citizen-led renovation. It reduces dependence on traditional banking channels, empowers communities to **pool local capital**, and increases **ownership, transparency, and trust** in local energy transitions. As proven by the Coopérnico experience in Portugal and now replicated in Antrodoco, this approach can mobilise thousands of small investors, often from within the same region, while ensuring that financing flows directly into **tangible, measurable local impact**.





Matchmaking for Life/Horizon EU Funding (CERA, Italy)

CLR provided targeted matchmaking support to CERA by identifying suitable EU funding opportunities and preparing the community to participate as a case study in larger innovation projects. This support included reviewing calls, assessing eligibility criteria, structuring pilot contributions, and preparing preliminary concept material. Although funding outcomes depend on external selection processes, the activity enhanced the community's strategic readiness and increased visibility among national and European stakeholders.

Participation of Pilots in High-Level Financing Events

Representatives from several energy communities, including the Castello Green House, were supported to participate in high-level events such as the "Fossil-Free Cities" gathering in Brussels. These events included exchanges with financing organisations, impact investors, and EU policy actors, helping communities understand future funding landscapes and strengthen partnerships for upcoming renovation cycles.

3.3 Regulatory & Legal Support

Webinar: "Energy Communities and EU Policy Updates" (All Pilots)

To support pilots across Europe in navigating rapidly evolving legal frameworks, CLR hosted a cross-country webinar on EU policy developments affecting energy communities and citizen-led renovation. The session explained the implications of the Clean Energy Package, renewable energy provisions, consumer protection requirements, cooperative governance responsibilities, and national transposition processes. This shared knowledge helped communities recognise their rights, obligations, and opportunities within the regulatory landscape, enabling them to make informed decisions when organising collective renovations or forming formal energy community entities.

Registration of CERA as a Not-for-Profit Cooperative (Italy)

CLR provided targeted legal support to transform CERA from an informal association into a registered cooperative, a necessary step to access subsidies, enter into contractual

relationships, and operate energy infrastructure. Support included analysing legal risks, drafting statutes, aligning governance structures with cooperative law, and preparing documentation for registration with Italian authorities.

Formation of the Energy Communities Union (Alsómocsolád, Hungary — ongoing)

In Hungary, CLR is supporting Alsómocsolád and ten additional local communities in developing a single umbrella entity: the **Energy Communities Union**. This aims to consolidate governance capacity, improve access to funding, build shared expertise, and enable small rural communities to act collectively rather than in isolation. CLR provides guidance on legal structuring, cooperative models, and statutory requirements to ensure compliance with national energy community legislation.

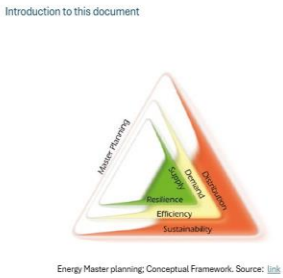
3.4 Business Case Development & Evaluation

The Girona Energy Masterplan

The **Girona Energy Masterplan**, was developed and applied in Girona (Spain) by IEECP, with the of providing the Girona provincial council with a comprehensive and structured framework for planning energy-related developments and strategies at a local level.

The Masterplan guide commences with establishing the local ***Vision*** *for future interventions and developments:* this entails the solidification of the communities' objectives to be achieved with the synthesised masterplan (e.g. energy cost-reductions, improved living spaces,) and the stipulation of the ***Guiding principles*** (e.g. inclusivity, transparency, equity) which the masterplan must serve.

Following, the masterplan requires a ***Basis Setting***, via the meticulous depiction of the **community's profile** (e.g. average age, population, minorities), followed by the **community's energy demand analysis***, including* heating & cooling, energy demands for domestic activities, and transportation. Then a mapping of **energy supply and infrastructure** shall be performed, describing the current local energy sources, heating systems and storage methods, connections, available renewable resources, layout constraints, etc. Next, an **Energy Scenario** is outlined, including **solutions** that can be locally materialised, while describing sustainable **financial plans** for their successful completion and long-term fruition, as well as their **regulatory compliance** with EU, national and regional frameworks. The Energy Masterplan entails also an i**mplementation roadmap,** where the community engagement practices are described, as well as the step-by-step **funding application procedures.** Lastly, the Masterplan proposes a **monitoring framework** for the strategies' implementation performance, and the performance evaluations, as well as **risk management and mitigation actions.**



Energy Master planning; Conceptual Framework. Source: link

3.5 Communication & Engagement Activities

The Energy Personas Guide

The Personas Guide was developed as part of the Citizen-Led Renovation (CLR) initiative to help Energent better tailor its group renovation services to different customer needs. Personas are detailed, fictional profiles representing diverse customer segments, enabling the communication team and energy advisors to refine their strategies and engagement approaches. By understanding specific behaviours, motivations, and concerns of different types of residents, Energent can create more targeted outreach and support mechanisms for homeowners considering renovations.

The guide introduces four key personas, each representing a distinct segment of Energent's audience. These include Welvarende Willy (the affluent homeowner needing reassurance about investments), Cijfergerichte Cédric (the data-driven decision-maker focused on cost-effectiveness), Bezorgde Barbara (the hesitant homeowner requiring emotional support and guidance), and Geëngageerde Gita (the eco-conscious, budget-conscious renovator taking a phased approach). By using these personas, Energent can improve communication, streamline service offerings, and ensure a more effective renovation journey for a range of clients.

The implementation of these personas allows Energent to strategically anticipate customer expectations, communicate in a language suited to each audience, and align internal processes to maintain consistency. The guide is also a valuable tool for brainstorming new ideas, testing services, and evaluating marketing campaigns to enhance citizen engagement in renovation efforts. Ultimately, it supports a customer-centric approach to sustainable renovation, fostering deeper trust and more effective decision-making for communities looking to improve their homes.

Application and Expansion During CLR II

During CLR II, the Persona Guide was further operationalised through collaboration with **ZuidtrAnt**, a Belgian cooperative expanding its district heating network and supporting grouped renovation efforts. ZuidtrAnt faced the challenge of reaching households beyond the usual early adopters, especially residents who were hesitant, hard to reach, or less familiar with sustainability concepts.

CLR supported ZuidtrAnt through:

• **Hands-on training sessions** demonstrating how to apply personas to real campaigns.
• Exercises where staff and volunteers created persona-specific visual materials using tools such as Canva.
• Group discussions analysing which messages resonate with which household types.
• Refinements to ZuidtrAnt's website, brochures, and renovation communication workflows to ensure each persona could easily identify the information relevant to them.
• Targeted outreach strategies to broaden participation among culturally diverse and lower-income households.

The persona tool thus moved from a conceptual framework developed in Phase I to a **fully applied communication method** integrated into day-to-day renovation outreach practices during Phase II.

Overall Contribution and Replicability

The Persona-Based Communication Tools have demonstrated their value as a flexible, scalable approach to inclusive engagement. They help organisations:

- Broaden participation beyond early adopters.
- Address trust, affordability, and comprehension barriers.
- Communicate complex renovation information in relatable ways.
- Align internal communication practices across teams.
- Design campaigns that reflect the diversity of citizens' needs and behaviours.

Because the personas are modular and adaptable, the tool can be easily replicated in any municipality, cooperative, or community-driven renovation initiative. It provides a human-centred foundation for strengthening outreach, empowering households, and ensuring that citizen-led renovation strategies reach the widest possible audience.

Communication support packages

Communicational support was provided under the Citizen-Led Renovation (CLR) initiative to strengthen ZuidtrAnt's capacity to reach and engage households. Recognising that communication was the key factor in expanding its heating network, ZuidtrAnt received targeted support to professionalise its outreach and build stronger connections with diverse community groups.

The service combined hands-on training, strategic guidance, and the development of practical communication materials. It included the design of brochures and flyers tailored to different audiences, as well as updates to ZuidtrAnt's website to provide clear, accessible, and visually engaging information on the benefits of connecting to the heating network and undertaking renovations. In parallel, workshops supported staff in applying persona-based communication methods in practice.

In this way, the cooperative can deliver messages that are consistent across channels, while still tailored to different resident profiles. This makes it possible to address specific household concerns, improve visibility, and build trust within the community.

A workshop titled "Targeted Outreach: Using Canva for Effective Persona-Based Communication" was organised with ZuidtrAnt and ENERGENT. The session introduced the use of personas as a method to design tailored communication strategies for group renovations. Participants reviewed examples of persona-specific communication materials and then engaged in a hands-on exercise where they created their own visuals. These outputs were discussed collectively to identify strengths and weaknesses, thereby deepening the participants' understanding of effective design and messaging.

3.7 Tools and services developed for Learners and Followers

The Connecting Cabra renovation handbook

The Connecting Cabra renovation handbook has been created by Th!nk E and Th!nk Europe and offers a valuable resource for the sustainable refurbishment of mid-terraced houses in the Cabra community in Dublin. This document demonstrates their commitment to providing comprehensive technical support and financial feasibility assessments for a variety of energy-efficient renovation scenarios. The Cabra energy community finds in these pages the

knowledge and guidance needed to carry out renovations that not only improve the quality of residential living but also promote environmental sustainability.
The document outlines a comprehensive approach to retrofitting and renovating a mid-20th-century terraced house in Cabra, Dublin. A specific set of guidelines and a plan are very carefully developed with a focus on two key areas:

- Technical aspects of renovations: This involves detailed advice on how to carry out renovations in a way that improves the building's energy efficiency. It might include which technologies to use, more energy-efficient materials, and construction methods that help reduce energy consumption.
- Financial aspects of renovations: This pertains to guidance on managing the costs associated with these renovations. It could involve information on budgeting, funding options like loans, grants, etc. cost-benefit analyses, return on investment calculations, and potential savings from reduced energy consumption.

Here is a more detailed breakdown of the key elements included in the document:

Building description and assessments

- **Building profile:** The document begins by painting a picture of the subject property, detailing its architectural features and layout, which includes extensions, living spaces, bedrooms, and the back yard.
- **Building assessment:** Kennedy & Associates Chartered Surveyors conducted a thorough assessment, rating various aspects of the property based on their condition, which includes essential and immediate repairs (Condition 3), non-essential repairs (Condition 2), no repair needed (Condition 1), and visual-only assessments (Condition 0).
- **Energy rating:** The current Building Energy Rating (BER) is E1, with recommendations that could potentially improve the rating to A3, significantly enhancing energy efficiency.

Grant opportunities and recommendations

- **SEAI grants:** The document outlines grants available through the Sustainable Energy Authority of Ireland (SEAI) for different types of renovations, such as insulation, fenestration, and renewable energy systems.
- **Surveyor and BER assessor:** Detailed observations from the chartered surveyors and BER assessors provide a clear view of the existing conditions and potential upgrades. These include the need for repairs to the roof, insulation improvements, and upgrades to the windows and doors for better thermal performance.

Retrofit scenarios

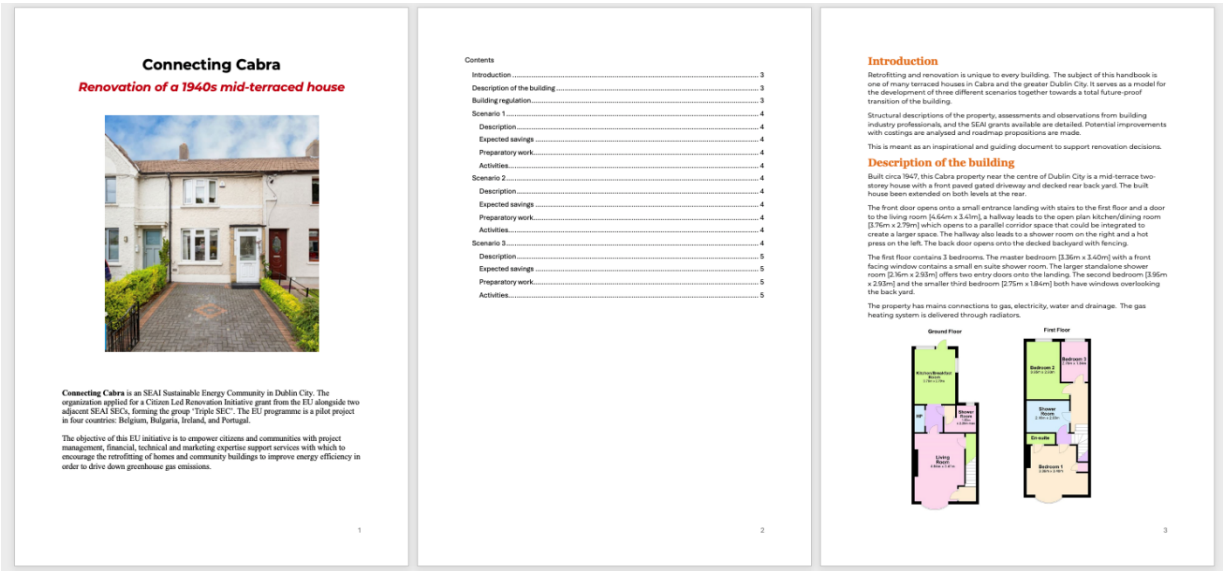
- Scenario 1: Describes initial, **non-essential improvement** such as better lighting, roof insulation, and minor modifications to the kitchen. These steps are foundational and won't interfere with more significant future renovations.
- Scenario 2: Builds upon the first by adding **window replacement and wall insulation**, plus the installation of a **mechanical ventilation system**, which is crucial for maintaining indoor air quality especially after tightening the building envelope.
- Scenario 3: Envisions a **comprehensive overhaul** that includes a heat pump for efficient heating, floor insulation, new radiators optimised for the heat pump operation, and the installation of photovoltaic panels for on-site renewable energy generation.

Each scenario is structured to enable incremental improvements, allowing homeowners to plan and budget over time. The expected savings are not detailed in the excerpt provided but would typically include both energy savings and potentially reduced maintenance costs due to updated systems and structures.

Technical and financial support

- **Advisory services:** The document suggests consulting with building industry professionals, including a chartered surveyor and a BER assessor, to ensure informed decision-making.
- **Financial analysis:** While specifics are not included in the excerpt, it is clear that financial feasibility is considered, with the mention of an Energy Master Plan that includes cost ranges, savings, and payback periods for different levels of retrofitting.
- **Regulatory guidance:** The document also references Irish Building Regulations and the Code of Practice for the Energy Efficient Retrofit of Dwellings, ensuring that any renovations comply with current legal standards.

Overall, the handbook appears to serve as an essential tool for both the homeowners and the professionals involved, guiding them through a process that balances technical precision with financial prudence to achieve a sustainable, comfortable, and future-proofed home.



Keeping your home warm: renovation, insulation and design challenges

Who is this guide for?
The guide is aimed at homeowners in **Cabra, Phibsboro, and Stoneybatter**, especially those living in former Corporation houses. These homes are notorious for poor energy efficiency, with significant heat loss through both the roof and walls. The guide provides key information on cost-effective insulation and retrofitting measures that can make these homes warmer and cheaper to heat.

What will you learn?
This guide covers the following key points:

- **Heat loss**: Irish homes typically lose 30% of heat through the roof and another 30% through the walls. Attic insulation should be prioritized, followed by **External Wall Insulation** (EWI).
- **Unique challenges**: Retrofitting Cabra, Phibsboro, and Stoneybatter houses poses unique challenges, such as ensuring breathable insulation materials are used to prevent moisture and mold.
- **Common myths**: The guide dispels myths surrounding retrofitting, such as the belief that it is too disruptive or ineffective unless done all at once.

Key sections of the guide
1. Heat loss in Cabra, Phibsboro, and Stoneybatter homes
The guide explains how heat loss occurs in typical Cabra, Phibsboro, and Stoneybatter homes, particularly through uninsulated roofs and walls. It stresses the importance of reducing **U-values** (a measure of heat loss) by installing modern insulation materials, which can lower heat loss by over 80%.

- **Attic Insulation**: This should be the first step in any retrofitting project as heat loss through the roof is one of the most significant contributors to higher energy costs.
- **External Wall Insulation (EWI)**: Cabra, Phibsboro, and Stoneybatter homes often face specific challenges when installing EWI, but solutions such as using breathable materials can help overcome these issues.

2. Breathable materials
Older homes in **Cabra**, **Phibsboro**, and **Stoneybatter** were built with ventilation in mind, with gaps in doors, windows, and fireplaces that allowed air to circulate naturally. Modern retrofitting efforts must take this into account by using **breathable insulation materials** to maintain air quality and prevent dampness.

- **Examples of breathable insulation**: The guide recommends materials like wood fibre, expanded cork, and rock wool, particularly in attic insulation, to allow moisture to escape while retaining heat.

3. Ventilation and air quality
Ventilation is critical when retrofitting older homes. Proper ventilation systems, such as **mechanical heat recovery ventilation** or **demand control ventilation**, should be installed alongside insulation to maintain indoor air quality, reduce humidity, and prevent Mold growth.

4. Design challenges

The guide provides detailed diagrams showing common areas where heat escapes in Cabra, Phibsboro, and Stoneybatter homes, such as where the roof meets the wall or where extensions meet the original structure. These "thermal bridges" are points where heat bypasses insulation, leading to inefficiency. Ensuring **continuous insulation** across these junctions is key to improving thermal performance.

5. Practical advice and resources

The guide includes **useful diagrams** and resources from experts such as **Dr. Joseph Little** and provides links to further reading, including the **Bristolian Guide to Solid Wall Insulation**. This section includes case studies on how continuous insulation can be achieved, with practical examples specific to Dublin homes.

6. Common myths about retrofitting

The guide addresses several common misconceptions about retrofitting:

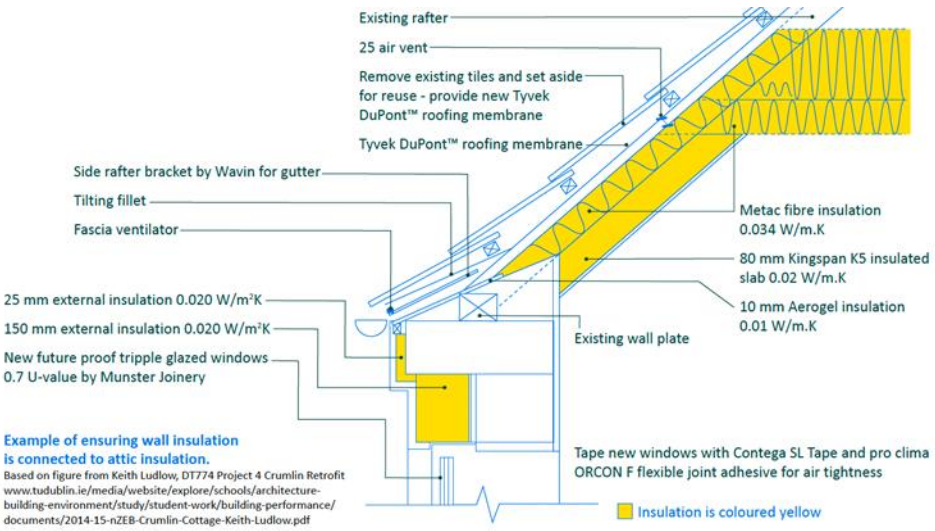
- **"Retrofitting is useless unless everything is done at once"**: Even small measures, like attic insulation, can significantly improve the warmth and energy efficiency of a home.
- **"External wall insulation is too disruptive"**: The installation process is minimally invasive, and the results are well worth the investment.
- **"Ventilation isn't important"**: Proper ventilation is critical to maintaining a healthy indoor environment, especially when homes are retrofitted to be more airtight.

7. Practical examples and diagrams

At the end of the guide, several **practical examples** and **diagrams** are provided to illustrate key insulation and retrofitting strategies. These visual aids are meant to help homeowners understand the technical aspects of retrofitting and apply best practices to their own homes. Below is an explanation of the key examples and their significance:

Example of continuous external wall insulation and attic insulation

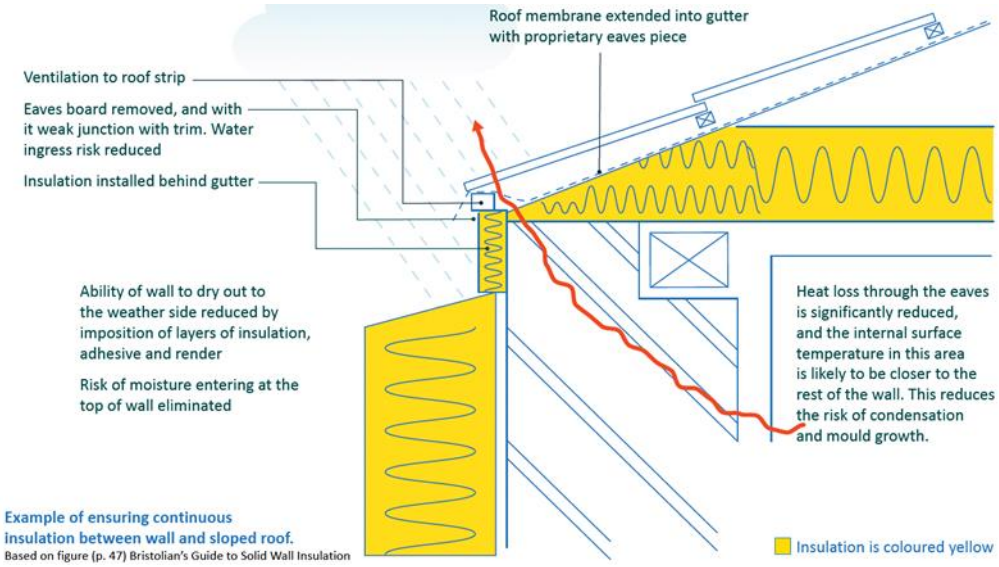
- Fehler! Verweisquelle konnte nicht gefunden werden. in the guide shows an example of how **continuous insulation** should be installed between external walls and the attic in a typical **Cabra, Phibsboro, and Stoneybatter house**. This is crucial for preventing **thermal bridging**, where heat escapes through gaps in the insulation.



- **Why It Matters**: Continuous insulation ensures that there are no gaps through which heat can escape, thus improving energy efficiency and maintaining a consistent indoor temperature. Properly insulating the junctions between walls and the attic prevents cold spots and reduces the risk of Mold formation.

Insulation on external walls and sloped roofs

- **Fehler! Verweisquelle konnte nicht gefunden werden.** demonstrates **best practices for ensuring continuous insulation** between the walls and sloped roofs. This diagram is particularly useful for homes with sloped or pitched roofs, where ensuring a seamless connection between roof insulation and wall insulation can be a challenge.

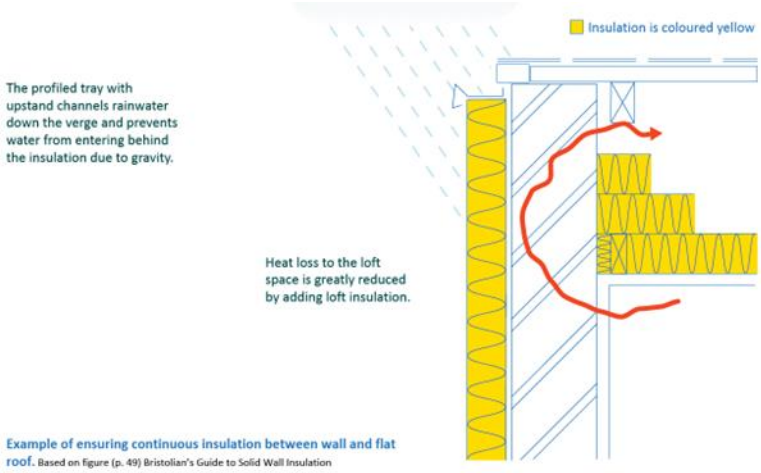


Example of ensuring continuous insulation between wall and sloped roof.
Based on figure (p. 47) Bristolian's Guide to Solid Wall Insulation

- **Why It Matters**: In homes with sloped roofs, insulation must cover the entire surface without leaving any gaps. If the insulation is incomplete, heat will escape through the roof, reducing the overall effectiveness of the retrofitting measures. This figure highlights how to maintain continuous insulation across different structural elements.

Insulation on external walls and flat roofs

- The following figure focuses on the challenges of insulating homes with **flat roofs**. This diagram highlights how insulation should be installed to ensure continuous coverage between the walls and the roof, minimizing heat loss and ensuring better thermal performance.



Example of ensuring continuous insulation between wall and flat roof. Based on figure (p. 49) Bristolian's Guide to Solid Wall Insulation

- **Why It Matters**: Flat roofs present unique challenges because they are often prone to leaks and heat loss if not insulated correctly. This example provides guidance on how to ensure that insulation is properly connected between the flat roof and the walls, further enhancing the home's energy efficiency.

Why these examples are important

The inclusion of these diagrams and practical examples is vital for helping homeowners understand how to retrofit their homes effectively. They serve as a visual reference, showing how to tackle specific challenges like thermal bridging, continuous insulation, and ensuring that different parts of the house are properly insulated.

- **Real-world application**: These examples are based on actual retrofitting projects and showcase best practices that have been tested and proven effective in similar homes.
- **Technical clarity**: By providing clear visual guidance, homeowners and contractors alike can ensure they are following proper retrofitting techniques, thus avoiding common pitfalls like incomplete insulation or ventilation problems.

These examples are valuable for homeowners in Cabra, Phibsboro, and Stoneybatter who want to better understand the retrofitting process and ensure that their homes are insulated in a way that maximizes energy savings and maintains indoor comfort.

Expected uptakes

This guide is intended to reach a broad audience within the **Dublin Sustainability Energy Community Network**. The **Sustainable Energy Authority of Ireland (SEAI)** will distribute the guide, ensuring it is widely available to other Sustainable Energy Communities (SECs) across Dublin. Specific expected uptakes include:

- **Distribution through SEAI and Dublin SEC network**: The guide will be shared with other Irish SECs through both SEAI and the Dublin Sustainability Energy Community Network. These organizations will use the guide to help other communities organize retrofitting initiatives.
- **Available online and at energy events**: The guide will be available on the relevant websites and shared at energy efficiency events across Dublin, ensuring widespread accessibility.
- **Targets thousands of homes in Dublin**: The guide is expected to target tens of thousands of homes across Dublin, offering practical advice for retrofitting and energy efficiency upgrades.

The **"Keeping our Home Warm"** guide provides comprehensive, practical advice tailored to homeowners in Cabra, Phibsboro, and Stoneybatter who are looking to make their homes more energy efficient and reduce heating costs. By tackling common myths, offering practical solutions, and highlighting the importance of ventilation, this guide serves as a valuable resource for anyone interested in retrofitting. With the involvement of **TRIPLE SEC** and distribution through **SEAI**, the guide aims to inspire other communities across Dublin to undertake their own energy efficiency upgrades, improving homes and reducing environmental impact.

4. Laying the Foundation: A Practical Guide for New CLR Initiatives

Embarking on a Citizen-Led Renovation (CLR) initiative can be both exciting and challenging. To support new starters, experienced CLR communities have shared their key recommendations for building strong, sustainable, and impactful renovation projects. This section outlines essential steps, required support, success factors, and emerging opportunities to guide communities through the process.

4.1. Starting from Scratch: Key Steps

Launching a successful CLR initiative requires careful planning, strong partnerships, and a clear vision. Follow these foundational steps to establish a solid framework:

Step 1: Identify Key Stakeholders

- Map out relevant **local associations, community leaders, and champions** who can support and advocate for the initiative.
- Engage with **municipalities, housing cooperatives, and financial institutions** early on to secure long-term backing.

Step 2: Secure Financial Foundations

- Compile an overview of **available funding opportunities** for community-led projects, including grants, subsidies, and crowdfunding options.
- Explore **innovative financing models** such as community bonds to enhance financial resilience.

Step 3: Navigate Legal Considerations

- **Seek legal advice** early, particularly if fast-tracked funding imposes strict timelines or regulatory constraints.
- Clarify **ownership structures, energy-sharing agreements, and liability issues** to ensure smooth implementation.

Step 4: Define Clear Project Goals and KPIs

- Establish well-defined **objectives and measurable Key Performance Indicators (KPIs)** to track progress.
- Align project ambitions with **realistic timelines and budget constraints**, considering external factors such as inflation and energy market fluctuations.

Step 5: Build Trust Through Transparency

- Conduct **realistic cost evaluations** to ensure credibility and community buy-in.
- Foster open dialogue with residents to **address concerns about affordability, benefits, and long-term impact**.

Step 6: Engage Decision-Makers Early

- Involve **local policymakers, municipal representatives, and funding bodies** from the beginning to secure institutional support.
- Frame the initiative in a way that aligns with **broader policy goals**, such as climate targets or housing improvements.

Step 7: Establish a Communication Strategy

- Develop **clear, consistent messaging** to ensure all stakeholders understand the project's scope and benefits.
- Use **multiple communication channels** (social media, community meetings, local newsletters) to reach diverse audiences.

Step 8: Learn from Others

- **Leverage the experience** of mature CLR initiatives to avoid common pitfalls and adopt best practices.
- Prioritise **community-driven approaches** that ensure long-term engagement and inclusivity.

4.2. Required Support

New CLR initiatives benefit from external guidance and structured support. These resources and tools can help accelerate progress:

Communication and Outreach

- Develop **customisable templates** for community meetings, local events, and digital outreach campaigns.
- Craft **simple, relatable messaging** to engage a broad audience and make renovation benefits clear.

Learning from Other Communities

- Gain **insights into successful strategies** from experienced energy communities.
- Organise **peer-learning exchanges** and study visits to observe best practices in action.

Legal and Technical Guidance

- Seek **legal and technical support** to streamline processes and **resolve regulatory complexities**.
- Work with **specialists in energy law and finance** to ensure compliance and financial viability.

Capacity-Building and Institutional Support

- **Develop training materials** for community members to enhance their technical and financial literacy.
- Consider forming a **regional agency** to coordinate CLR efforts and prioritise energy-related developments at a larger scale.

4.3. Conditions for Success

Certain factors are critical in ensuring that CLR initiatives thrive over time. Focus on these core principles:

1. Strengthen Local Capacity

- Implement **capacity-building workshops** for community members, volunteers, and project coordinators.
- Facilitate partnerships with **technical experts, legal advisors, and financial institutions**.

2. Build Trust and Cooperation

- Promote **collaboration with municipalities and legal entities** to improve credibility and streamline processes.
- Foster **transparent, two-way communication** to ensure all stakeholders feel heard and involved.

3. Maintain Public Confidence

- Ensure **consistent access to information** so that community members can make informed decisions.
- Demonstrate reliability by delivering **measurable results and regular progress updates**.

4. Avoid Overconfidence and Strengthen Internal Support

- Acknowledge that **no single group can manage CLR efforts alone** - build a **strong internal team** with diverse expertise.
- Stay adaptable to challenges and **seek external support when needed** to maintain project momentum.

4.4. Upcoming Trends and Opportunities

Emerging developments in the energy and renovation sectors present new opportunities for CLR initiatives. Stay informed and ready to adapt by considering the following:

Financing Innovations

- Explore **community bonds and collective investment models** as solutions to human resource and financing challenges.
- Look for **new grant opportunities** and evolving funding mechanisms that support community-led initiatives.

Policy and Legal Frameworks

- Monitor **upcoming regulatory changes** that may create new advantages for citizen-led renovations.
- Advocate for **policy improvements** that facilitate easier access to funding and technical assistance.

Leveraging Professional Expertise

- Recognise the **flexibility of branding and marketing agencies** in helping community initiatives expand their reach.
- Use **data-driven communication strategies** to engage more stakeholders effectively.

Energy Costs and Climate Regulations

- Factor in **rising energy prices and stricter climate policies** as key drivers that could encourage participation.
- Align CLR initiatives with **policy obligations**, as compliance requirements may increase engagement from homeowners and businesses alike.

Effective Community Engagement

- Prioritise **simple, clear messaging** that makes the benefits of CLR accessible to all audiences.
- Highlight **tangible outcomes** such as cost savings, increased comfort, and energy independence to attract more interest.

5. Conclusions

The insights gained from CLR Phase II reinforce the fundamental principles of **long-term community engagement, structured support mechanisms, and well-defined financial and legal frameworks**. The pilots demonstrated that while citizen-led renovation (CLR) is a powerful tool for driving energy-efficient building improvements, **sustained success requires ongoing support, clear governance structures, and strong stakeholder collaboration**.

This handbook provides **practical guidance, tools, and step-by-step recommendations** to help communities, policymakers, and support services effectively implement CLR initiatives. By drawing on real-world experiences from the pilot projects, it offers a **structured approach to overcoming common challenges** and scaling up community-led renovations in diverse contexts.

To support communities in implementing CLR, a range of **tailored tools** was co-created with the pilot projects. These include:

- **Communication and outreach materials** designed to engage diverse segments of the population, such as persona-based strategies in Belgium, motivational videos in Hungary, and digital communication toolkits.
- **Step-by-step renovation guides** providing technical and financial guidance for home upgrades, including the *Connecting Cabra Renovation Handbook* in Ireland and the retrofitting guidelines for Girona in Spain.
- **Legal and financial advisory resources** to help communities address regulatory barriers, qualify as energy communities, secure funding, and establish sustainable collective renovation models.
- **Collaboration and networking platforms** that link local initiatives, enable peer learning, and support the creation of wider alliances such as Hungary's emerging Energy Communities Union.

These tools were developed **in response to real challenges faced by the pilots**, ensuring that they are **practical, adaptable, and effective** in supporting community-led renovation efforts.

By applying the practical steps, co-created tools, and proven strategies outlined in this handbook, CLR initiatives can empower citizens, strengthen local ownership of the energy transition, and ensure that building renovation contributes not only to decarbonisation but also to affordability, inclusiveness, and resilience. In doing so, they offer a clear pathway for communities to contribute meaningfully to Europe's broader climate and energy goals while ensuring that no citizen or municipality is left behind.