



Report on citizen-led strategies developed at demonstrators' level

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Report on citizen-led strategies developed at GENDER4POWER demonstrator in Schweizer Haus Hadersdorf, Austria

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Introduction

This document outlines strategies for reducing energy poverty, drawing on the insights, expertise, and practical experiences gained from the GENDER4POWER pilot areas (including Ambassadors) and project partners. The strategies presented here are the result of a collaborative process between project partners, based on previous conducted analysis (WP2) and implemented participatory activities (WP3). This document details the core pillars of the various strategies, including the tools, stakeholders' engagements and analytical frameworks employed throughout the development process.

Pilot context: Austrian demonstrator: Schweizer Haus Hadersdorf (SHH)

The Austrian demonstrator develops and tests a gender-responsive participation and communication model that combines co-design, ambassador engagement, stakeholder collaboration and energy literacy to improve the engagement of vulnerable households in the energy transition.

The Schweizer Haus Hadersdorf (SHH) is a non-profit inpatient and outpatient therapy facility for addiction disorders, located in Vienna, the capital of Austria. The facility pursues the goal of supporting people with addiction disorders on their way to a stable, self-determined life through short- to medium-term therapies, medical-psychiatric treatment and social work support. Thanks to the proximity to the City of Vienna and good accessibility, the clients remain integrated, as visits and outings maintain contact with family and friends.

The SHH main house is a historic villa located in Vienna's 14th district. Alongside the outpatient clinic, it provides accommodation for inpatient clients in residential groups, including one group specifically for women. SHH follows the principle of autonomous self-care: responsibilities such as cooking, laundry, and cleaning lie with the clients themselves. Accordingly, the residential groups are fully furnished and equipped. Therapeutic treatment at the main house combines milieu-therapeutic groups, individual therapy sessions, and regular medical consultations in a structured daily routine. A central component of the program is occupational therapy, which takes place in the garden during summer and in the annex workshops during winter. The areas of work include garden maintenance, creative activities, housekeeping, laundry, and woodworking.

The SHH is also operating six satellite branches across Vienna, one of which is the Gesundheitsgreisslerei in Vienna's 11th district. This branch is an outpatient therapy facility run by women for women with addiction disorders, including alcohol and illegal substances. Its treatment concept builds on long-standing, evaluated methods that are continuously adapted to the specific needs of women with dependency problems. Alongside psychotherapeutic and medical care, the program emphasizes health promotion, the strengthening of self-efficacy, and social work support to help clients move toward a self-determined life. Gesundheitsgreisslerei wants to offer women a place of retreat with a wide range of services that support clients in getting healthy in a friendly, open atmosphere.



Within the project, we collaborate with Wiener Wohnen and the Federation of Limited-Profit Housing Associations (Wohnpartner) to ensure that the approaches and formats tested at SHH can be transferred and scaled beyond the pilot context.

Strategy on engagement of citizens and community

The Austrian demonstrator follows an inclusive engagement strategy that combines capacity building, knowledge transfer, and community participation to address energy poverty and strengthen involvement in the energy transition. Stakeholder collaboration and citizen engagement are not only supporting elements of the demonstrator, but constitute a core part of the approach being developed and tested. Through continuous collaboration with ambassadors, social organizations, housing actors and policy stakeholders, participatory methods and communication approaches are iteratively refined and validated.

Particular attention is given to inclusiveness and gender sensitivity through tailored communication formats, dedicated women-only workshops, and low-threshold participation opportunities. Knowledge transfer activities are designed to address misinformation, strengthen practical skills, and support the dissemination of knowledge through established community networks and multipliers. Together, these activities contribute to the development of a transferable, gender-responsive model for engaging vulnerable households in the energy transition, with particular attention to women and other groups disproportionately affected by energy poverty. The strategy pursues a dual purpose: creating direct benefits for vulnerable households while generating evidence and practical experience to inform future policy development and the replication of gender-responsive approaches.

Energy literacy and capacity for vulnerable groups through SHH

The approach focuses on empowering vulnerable SHH clients through energy literacy activities, peer-to-peer learning, and trusted intermediaries such as social workers, therapists, and peer educators. By building on participants' everyday experiences and creating accessible learning environments, the project promotes informed decision-making, trust in renewable energy solutions, and meaningful participation.

Multiplication by key institutional stakeholders

At the organizational level, the strategy supports SHH and partner organizations, such as Wiener Wohnen and Wohnpartner Wien (administration and support for municipal housing in Vienna), in integrating energy poverty awareness, targeted communication approaches, and energy-related knowledge into their daily work and their organizational processes.

Interactive workshops, training activities, and co-creation processes foster a shared understanding of energy poverty, energy communities, and sustainable energy practices, while strengthening institutional capacities and long-term organizational learning.



Development of a solidarity-based Energy Community as a long-term vision

The long-term vision is to combine these engagement activities with the establishment of a Citizen Energy Community (CEC), enabling renewable energy sharing, social inclusion, and community ownership. Through continuous stakeholder involvement, practical testing, and the development of transferable blueprints, the project aims to create replicable approaches that can be applied in comparable social housing and community-based contexts.

Defining the purpose and scope of the collaborative process at SHH and Wohnpartner

Primary goal of collaboration

The cooperative process of the Austrian demonstrator SHH directly contributes to the overall strategy of citizen and community engagement by addressing the limited participation of vulnerable households in energy activities. It aims to strengthen SHH clients, who are directly affected by energy poverty, by improving their energy literacy. This is achieved through accessible information, guidance, and support provided by trained SHH staff, who act as multipliers within the organization and create trust-based learning settings. The patients and clients act as peer educators in this context. By communicating at eye level among their peer group, they share knowledge and skills, learn from their own group and can remove common prejudices and myths. Building on clients' everyday experiences, the process supports informal learning, raises awareness of energy-related vulnerabilities, and makes different energy solutions more understandable, trustworthy, and relevant.

At the same time, the process supports SHH partner organizations in recognising energy poverty and integrating appropriate measures and communication approaches into their daily work. A key objective is to establish a shared understanding of energy poverty, energy transition challenges, and possible solutions among the participating communities and organizations. Through this common knowledge base, the project seeks to empower individuals and strengthen institutional capacities, thereby enabling more effective and inclusive responses to energy-related vulnerabilities.

Scope of collaboration

The collaborative process focuses on information exchange, training, co-creation, and learning within the participating organizations. Activities include knowledge transfer and workshops on energy-saving practices, renewable energy solutions, and energy communities. This strategy on citizen engagement does not aim to solve broader structural, social, or housing policy challenges beyond the project scope, but rather concentrates on strengthening capacities, supporting informed decision-making, and developing practical approaches that can be applied and replicated within participating organizations and communities.



Success measurement and communication

The success of the collaborative process will be assessed through both quantitative and qualitative indicators. These include the number of trainings and participants involved, the level of engagement of SHH clients and supporters, and the successful implementation of knowledge transfer activities.

Further indicators include increased awareness and understanding of energy poverty and renewable energy solutions, the integration of acquired knowledge into organizational practices and supporting the progress towards the preparation of related energy community activities. Success will also be reflected in the development of a shared understanding among stakeholders, strengthened cooperation between participating organizations, and the empowerment of individuals to actively contribute to a more sustainable and socially inclusive energy future.

Results and lessons learned will be communicated through workshops, project and consortium meetings, dissemination materials, and exchanges with partner organizations to support replication and long-term impact.

Communication & capacity building by intermediaries

The training approach for three target groups within the demonstrator's organizational structure

Staff members

Professionals, like social workers and therapists receive background information, deepen their communication skills and knowledge of energy-related behaviors in a gender-sensitive way. Thus, the staff's capacity to integrate sustainable energy practices within organizational constraints will be strengthened. They support the dissemination and scaling of knowledge within the organization and act as a knowledge hub for SHH's patients.

Patients as peer educators

Patients are vulnerable to energy. Their way of using energy is often inefficient due to a lack of knowledge of energy-related topics, motivation, and accessible information. They are therefore addressed through peer educators who can build trust, communicate at eye level, and support informal learning among equals. This enables the transfer of practical measures that can be directly applied in everyday life. Training sessions, together with accessible information materials and tailored handouts, form the basis for effective knowledge transfer and awareness raising.

By positioning patients and clients as peer educators rather than only recipients of information, the Austrian demonstrator tests a trust-based approach to strengthening energy literacy and participation among vulnerable households. This peer-learning model represents one of the key transferable elements of the demonstrator.

Women only workshops

Dedicated women-only workshops on energy literacy will be organized. Based on the gender analysis conducted, women often felt less confident in mixed-gender



settings, this format will provide a safe space to discuss energy-related challenges, strengthen energy literacy, and explore practical ways to reduce energy costs. Particular attention will be paid to gender-specific barriers relating to energy issues within the women's daily life, as well as in relation to the energy transition. In response to the findings that women are often affected differently by energy poverty, an inclusive, gender-sensitive communication format is developed. By including a gender dimension and gender perspective in the project, the participation of women in energy-related activities becomes more visible and accessible.

Clear boundaries

Patients are not intended to become members of an energy community, while SHH itself may participate in an energy community and serve as a blueprint for future patient-oriented training formats. The Gender Action Plan (GAP) is understood as a concrete measure within this process.

Knowledge transfer

The training focuses on increasing energy literacy, sharing practical skills within existing groups and addressing myths, prejudices and misinformation through a "myths versus facts" approach. Inclusive and gender-sensitive communication is, as we point out in the GAP, essential to ensure that SHH's diverse clients can fully understand and engage with the information provided. Without targeted approaches, messages may not reach all groups equally, and opportunities for participation and trust-building can be limited. Once a basic understanding has been established, alternative energy systems and energy communities become more accessible, trustworthy, and relevant to participants' everyday lives.

Case studies Wohnpartner

At the Limited-Profit Housing Association (Wohnpartner) Wien – as part of Wohnservice Wien, a subsidiary of the City of Vienna – more than 150 employees in nine areas are involved in community work, conflict work and networking in municipal housing in order to strengthen the neighborhood in Vienna's municipal housing. 500,000 residents with different life situations and needs live in 220,000 urban flats and are characterised by diverse backgrounds, educational and professional biographies.

Multiplier within the urban municipal housing community

As Wohnpartner professionals are in direct contact with tenants of Vienna's municipal housing and have a strong understanding of their diverse needs and everyday realities, Wohnpartner Wien acts as an important multiplier for reaching residents. Due to its strong institutional anchoring within the City of Vienna and its established role, Wohnpartner is a core implementation partner for practically testing the developed approaches and supporting their replication across comparable housing contexts.

Activities are structured around several thematic areas, including general aspects of energy poverty and targeted communication strategies in the energy transition. Engagement takes place mainly through interactive workshops and seminars that include group work and actively build on participants' own experiences.



Embedding inclusive governance in practice

In this context, Wohnpartner contributes to inclusive governance by embedding the developed approaches into its organization. Through its direct work with tenants and its established structures within municipal housing, Wohnpartner supports the continuous integration of diverse resident perspectives into the implementation, testing, and refinement of the project solutions.

In addition, Wohnpartner already applies capacity-building through internal initiatives such as the Klima-Klub. Through these formats, Wohnpartner shares information and practical knowledge with residents of Vienna's municipal housing and supports them with topic-related challenges in their everyday lives. This existing experience strengthens Wohnpartner's role as an implementation partner and provides a strong basis for embedding the project's approaches into ongoing organizational practice.

Building on Austrian sister projects / synergies

Sister project EWW4EW

Our knowledge base will be complemented by a feasibility study on renewable energy systems for the SHH premises, funded by the Austrian Sister Project EWW4EW. While the feasibility study clarifies technical and economic feasibility, the present project adds the social, communicative and capacity-building dimension. Together, both strands create a comprehensive basis for implementation. Further synergies arise from the ongoing discussion process among the board members of the EWW Association, as property owner of the SHH premises. This ensures strategic anchoring and institutional ownership, while the training and knowledge transfer activities strengthen acceptance, understanding and practical engagement within the organization

klimaaktiv training program on social energy advice

The Austrian climate initiative klimaaktiv offers a free additional qualification in social energy advice for professionals working in social work, social pedagogy and social counselling. The program combines social and technical expertise to enable professionals to support low-income households in reducing energy costs, improving the efficient use of energy and enhancing housing quality. The training series comprises two online modules and two face-to-face seminars. It is complemented by online networking meetings and practical materials that participants can use in their advisory work.

Social energy advice complements conventional energy consulting, which generally focuses on larger investments such as building refurbishment or heating-system replacement. Following an initial consultation, the approach typically includes a household visit during which heating practices and saving opportunities are discussed, electricity consumption is analyzed, and household appliances are checked. Where necessary, follow-up visits may address issues such as meter readings or mold. Alongside social-work professionals, peer advisers with relevant lived experience and an understanding of the target group's language and communication needs can also play an important role.



For the Austrian demonstrator, this program provides a relevant example of how energy-related knowledge can be embedded in established social-support structures. While the sister projects primarily address technical feasibility, organizational development or energy advice, GENDER4POWER contributes a gender-responsive participation and communication approach that strengthens energy literacy, stakeholder collaboration and the meaningful involvement of vulnerable households in the energy transition.

First replication activities

FrauenLernRaum Workshop with a female audience

An interactive workshop was held on 9 February 2026 with around 15 women at the FrauenLernRaum of the ASH Forum of Civil Society in Vienna. The workshop addressed everyday energy use, electricity bills and key energy-related terms. It showed that energy behavior is shaped by values, social influences and cultural backgrounds, which must be considered when reaching the female target group.

For the project, this underlines the need for practical, needs-based energy consulting. For the women, the workshop created a space for inclusive governance, where their experiences with energy poverty were heard, questions could be asked openly, and they are valued and taken seriously.

Replication outlook

Future replication could include professional trainings in e.g., Caritas schools and related education programs. By integrating energy literacy, energy poverty and renewable energy topics into existing curricula, future professionals can be better prepared to support vulnerable groups in practice-oriented and trusted ways.

Analysis of the most suitable participatory decision-making approaches in the context of energy poverty

Target group and suitable methods

The target group are vulnerable people and patients of SHH, many of whom face social, economic or health-related challenges and may be affected by energy poverty. Due to limited resources, language barriers, low energy literacy or lack of trust, they often have difficulties accessing energy-related information. Particular attention is given to women as a subgroup within the target group. In this context, future workshops are planned that specifically address these needs, including women-only sessions.

Therefore, participation must be low-threshold, practical and supported by trusted intermediaries such as social workers, therapists or peer educators.

The most suitable approaches are interactive and community-based participation formats. Workshops that focus on everyday energy practices, practical support and open discussion have proven particularly effective. Such formats allow participants to connect energy topics with their own daily experiences and encourage mutual learning and exchange within their peer groups.



Selecting and reaching out to relevant stakeholders

Stakeholder selection is guided by the objective of directly engaging with vulnerable groups while at the same time achieving a multiplying effect. Therefore, Wiener Wohnen, as the largest municipal housing provider in Vienna, and the Federation of Limited Profit Housing Associations, as the umbrella organization for housing cooperatives and associations, were selected as key partners.

Reaching out to SHH clients mainly takes place through SHH staff, who are also trained on energy topics and gender-sensitive, inclusive communication. The staff delivers workshops and are provided with targeted communication materials to support these sessions. Engagement with the SHH supporters as multiplying stakeholders takes place through dedicated workshops and seminars tailored to their organizational context.

Planning the engagement events

Activities for SHH supporters

Activities for SHH supporters are structured around several thematic areas, including general aspects of energy poverty and targeted communication strategies in the energy transition. Engagement takes place mainly through interactive workshops and seminars that include group work and actively build on participants' own experiences. The workshop **"Reaching people and shaping the energy transition together: Target group-oriented communication in the energy transition"** strengthens participants' communication skills for renovation projects and supports the development of target group-specific approaches. It focuses on different consumer typologies, gender and diversity-sensitive communication, suitable formats for different audiences, and ways to motivate tenants to actively engage in the energy transition through clear, inclusive and trust-building messages.

Gender sensitive and tailored activities for SHH staff

The activities for SHH staff and clients specifically focus on capacity building workshops and seminars. The training aims to strengthen employees' understanding of energy poverty, gender-sensitive communication, and the diverse needs of vulnerable target groups. It seeks to equip staff with practical knowledge and communication skills that can be applied in their daily work with tenants and clients. The training targets employees of SHH who are in direct contact with tenants and clients. Participants will be invited through the internal communication channels of the SHH.

SHH is currently implementing strict cost and staff reductions due to federal budget restrictions and the withdrawal of additional funding sources. As available resources must be prioritized for core organizational activities, participation in additional on-site initiatives is currently not feasible. Online formats therefore represent a more suitable and resource-efficient option.

The online training series will start in autumn 2026 and will be delivered through digital learning to enable broad participation across organizations.



Sessions will be organised as webinars or interactive online workshops, combining expert input with practical exercises and discussion formats.

Capacity building through informal learning formats for SHH patients and clients

The objective of these activities is to engage patients and clients through peer educators and to enable informal learning among equals. The formats will focus on practice-oriented content, immediately applicable measures, and the exchange of knowledge and skills within the target group. In addition, the activities aim to address myths and prejudices related to alternative energy systems and to strengthen confidence in practical energy-related actions.

Patients and clients of SHH will be invited through SHH's existing communication channels and direct contact points, supported by staff members and peer educators.

The activities will take place during the project period in formats that are easily accessible for the target group. Depending on organizational capacities, they may be implemented as online sessions, small peer-led group formats, or informal exchange formats.

Organizing the necessary materials and tools

Necessary materials and tools are tailored to the different target groups (SHH staff, SHH clients, SHH supporters).

For SHH staff, training materials are developed for gender sensitive train-the-trainer seminars with a focus on methods and gender awareness, as well as on technical knowledge about energy savings and efficiency potentials. In addition, gender-sensitive communication guidelines are prepared for SHH, and dedicated staff workshops on inclusive and gender-sensitive communication are delivered.

For SHH clients, "light" information brochures and handouts are prepared that are tailored to clients' life circumstances and are easy to understand. They support gender sensitive energy literacy workshops and dedicated women only workshops on energy literacy.

For the SHH supporters, targeted workshop concepts and materials are developed that are tailored to the specific organization and enable good integration into existing structures and processes.

Facilitating the collaborative sessions

The collaborative sessions are facilitated by SHH staff who are trained in gender-sensitive and inclusive methods. In workshops with clients, facilitation focuses on low-threshold language, visual explanations and practical examples, and actively builds on participants' everyday experiences. Women-only workshops create a safe space for discussing energy use, care responsibilities and constraints.

Sessions with the SHH supporters are moderated as interactive formats which combine short inputs with group work and reflection on their own professional



practice. This helps to jointly identify feasible changes in procedures and communication that can be integrated into their organizations.

Documenting outcomes and ensuring follow-up

Outcomes are documented through short summaries of monitoring data, survey results and participant feedback, highlighting progress and remaining gaps. These findings are regularly discussed in project meetings to agree on adjustments to activities and materials. Key lessons learned are fed into updated tools and guidelines to support continuity and future replication.

Strategy on addressing social challenges for energy poverty alleviation

Developing this strategy, demonstrators aim to comprehensively address the specific dynamics of communities, creating tailor-made solutions that consider factors such as living conditions, time resources, literacy, access to information, social exclusion, language barriers, and gender perspectives. The strategy will also evaluate methods to avoid renovation interventions leading to gentrification or eviction of vulnerable households. Furthermore, it will yield solutions for alleviating both energy related and non-energy-related (e.g., building management, split incentives, spatial issues) administrative and regulatory barriers.

Introduction and objectives

The strategy for addressing social challenges for energy poverty alleviation is based on the specific context of SHH and the cooperation with the SHH supporters. Its main purpose is to reduce SHH clients' vulnerability to energy poverty and, to reach a significantly larger number of vulnerable households beyond SHH's direct client base through the multiplier approach.

Outline of key social challenges linked to energy poverty

Context SHH

Social groups affected: Inequalities and social consequences

Many SHH patients experience multiple and overlapping vulnerabilities, including low incomes, unemployment, health problems, addiction, mental health challenges, and unstable housing situations.

Women are particularly affected due to gender-specific inequalities, including lower incomes, caregiving responsibilities, single-parent households, and therefore a higher risk of poverty.

Structural inequalities strongly shape vulnerability to energy poverty. Limited financial resources reduce the ability to afford adequate heating, cooling, electricity, and energy-efficient appliances. At the same time, many clients have little influence over the energy performance of their homes, particularly when living in rented or social housing. Low levels of energy literacy and limited access to information can further increase vulnerability and hinder participation in the energy transition.



Energy poverty has significant social consequences for SHH clients and patients. Insufficient access to energy services can negatively affect physical and mental health, increase stress and social isolation, and reduce overall quality of life. Financial pressure resulting from high energy costs may force households to prioritize basic needs, leading to further social exclusion. For vulnerable groups already facing health and social challenges, energy poverty can reinforce existing disadvantages and create additional barriers to social participation and long-term well-being.

Municipal housing context in Vienna

Social groups affected: Inequalities and social consequences

Residents of Vienna's municipal housing can be particularly vulnerable to energy poverty due to a combination of low incomes, rising living costs, and limited access to information on energy-related topics. Many households have limited knowledge of energy consumption patterns, energy-saving measures, and available support schemes. As a result, energy use may be higher than necessary, leading to increased energy costs and a greater risk of financial strain.

Structural inequalities further shape vulnerability. Older residents, low-income households, migrants, and single-parent families may face additional barriers in accessing information and participating in the energy transition. Language barriers can make it difficult to understand energy bills, contracts, or information on support schemes and energy-saving measures. Many residents also feel insecure when interacting with energy providers, public authorities, or housing organizations, particularly when discussing technical or administrative issues. Limited energy literacy can further contribute to misconceptions and mistrust regarding energy-saving measures and alternative energy solutions, reducing the willingness or ability to adopt new practices and technologies.

When households cannot afford adequate energy services, the consequences extend beyond financial hardship. High energy costs can increase stress and reduce overall well-being, while difficulties in maintaining comfortable indoor temperatures may negatively affect health, particularly for elderly or vulnerable residents. Energy poverty can also contribute to social exclusion, as financial pressures limit participation in community life and reduce opportunities to engage with broader sustainability and energy transition initiatives. Strengthening energy literacy, reducing communication barriers, and building confidence in dealing with energy-related institutions are therefore essential for enabling inclusive participation and reducing energy-related vulnerabilities in municipal housing communities. Capacity building within our supporters, the housing organizations (Wohnpartner, Wiener Wohnen) is therefore essential to ensure that its staff can recognise energy-related vulnerabilities, respond to residents' needs, reduce communication barriers, and support tenants in dealing confidently with energy-related institutions.

Tailor-made intervention design

Across all project activities, particular attention is paid to adequate communication. The strategy for appropriate communication is based on gender-



sensitive, inclusive, and targeted principles. It recognises that language is never neutral but reflects and reproduces social structures and gender roles, especially in male-dominated technical fields where women may face subtle or overt devaluation and invisibility. At the same time, it takes into account diverse life realities, values, and attitudes and therefore draws on insights from social and communication sciences and target group segmentation to address different audiences with tailored messages.

Short-term measures (next 12 months):

- Development of info brochures and handouts tailored to the clients' life circumstances
- Gender-sensitive energy literacy workshops with SHH clients (mixed and women-only)
- Gender-sensitive train-the-trainer seminars and training sessions on technical knowledge of energy topics with SHH staff

Long-term measures (next 24 months):

- Development of gender-sensitive communication guidelines for SHH
- Cooperation with Wiener Wohnen and the Federation of Wohnpartner (Limited-Profit Housing Associations) to ensure that approaches tested at SHH can have a broader impact

The project aims to develop, test, and apply transferable blueprints that enable the wider replication and implementation of successful approaches beyond SHH.

Administrative and regulatory barriers

The Austrian demonstrator is affected by a combination of contractual, regulatory, administrative and organizational barriers. While the proposed technical measures are generally feasible, their implementation depends on resolving issues related to the existing energy-supply contract, permitting requirements, access to funding and coordination between the property owner, the operating organization, technical experts and public authorities. These barriers are particularly relevant in the context of energy poverty because the administrative burden associated with energy measures is often transferred to organizations and households with limited time, financial resources, and technical expertise.

Contractual and legal constraints at the SHH demonstrator

The most immediate legal obstacle at Schweizer Haus Hadersdorf is the existing energy contracting agreement with Equans, which runs until 2032. The agreement covers the current central gas-based heating system and must be legally and economically reviewed before a new heating system can be implemented. The associated service rights are indirectly registered in favour of the contracting company. Consequently, an agreement with the contractual partner must be reached before the existing system can be replaced or substantially modified. Possible options include negotiating the early termination of the contract or exploring whether the existing contracting arrangement can be adapted to support the transition to a climate-friendly heating system.



This contractual situation restricts the property owner's room for maneuver despite the technical feasibility of replacing the gas system. It may delay implementation, create additional legal and transaction costs, and reduce access to time-limited funding opportunities. More generally, long-term energy-service contracts can create a lock-in effect where existing fossil-fuel systems remain in operation even when technically and economically viable renewable alternatives have been identified.

The ownership structure itself is comparatively favourable. The Evangelischer Waisenversorgungsverein Wien is the sole owner of the property, meaning that a change in the heating system does not require agreement among several condominium owners. This avoids one of the most common governance barriers in multifamily buildings. Nevertheless, decisions must still be coordinated with SHH as the building operator and must take account of the needs of staff and clients, the therapeutic function of the facility, and the possible disruption caused by construction work.

Permitting, spatial and technical requirements

The recommended air-source heat-pump solution is subject to regulatory and technical authorization. In particular, the external unit must comply with applicable noise-protection requirements, and approval by the City of Vienna is required. Although the site appears to provide sufficient distance from neighboring buildings and a separate acoustic enclosure is not expected to be necessary, these assumptions must be confirmed during detailed planning and the permitting procedure. The proposed use of the existing chimney for new distribution lines also requires technical verification and approval by the responsible chimney-sweeping service.

Spatial and environmental conditions further limit the range of possible solutions. The property is located in a landscape-protection area and contains dense tree cover. These conditions restrict the installation of geothermal probes and may require coordination with the relevant environmental and municipal authorities. Groundwater use would require a hydrogeological assessment, a pumping test and water-law clarification because the available data are insufficient to demonstrate that the required extraction volume can be supplied reliably. A connection to the district-heating network is currently not available. These constraints do not prevent the implementation of the recommended heat-pump and photovoltaic solution, but they reduce the range of alternatives and increase the importance of early coordination with the relevant authorities.

Implementation must also be compatible with SHH's ongoing therapeutic and residential activities. Construction work, temporary interruptions to heating or hot-water services, noise and changes to accessible outdoor space could have a disproportionate effect on clients with health-related or psychosocial vulnerabilities. The technical planning process should therefore include an operational transition plan covering the timing of works, continuity of essential energy services, safety, accessibility and clear communication with staff and clients.



Funding and administrative barriers

Access to public funding represents another significant challenge. At the time of the feasibility assessment, relevant federal funding for replacing fossil-fuel heating systems in multifamily buildings was exhausted. Funding from wohnfonds_wien could not be accessed under the existing conditions because the building's heating-energy demand exceeded the applicable threshold. Eligibility would require complementary improvements to the building envelope and an updated energy performance assessment. The timing and conditions of future funding programs remain uncertain, making it difficult for a non-profit property owner to establish a reliable implementation and financing plan.

This illustrates a broader administrative problem: support instruments frequently assess heating replacement, building-envelope improvements and social objectives through separate procedures. A technically appropriate heating solution may not qualify for support unless it is combined with a more comprehensive and considerably more expensive package of measures. For non-profit organizations, social institutions and vulnerable households, fragmented funding requirements, changing application windows and complex technical documentation can delay or prevent otherwise feasible interventions.

Digital onboarding and technically complex information may exclude people with limited digital skills, language barriers or low energy literacy. Smaller, community-based initiatives frequently depend on voluntary work and may not have sufficient resources to provide the individual assistance required by vulnerable participants.

Monitoring, evaluation, and adaptation

Monitoring, evaluation and adaptation are ensured through a combination of quantitative indicators and lived experience. Measures are tracked using gender-disaggregated participation data, pre-/post-surveys on energy literacy and confidence, and qualitative feedback on gender sensitivity, inclusiveness and the relevance of activities, including the communication guidelines. Results are regularly discussed in project meetings and used to adjust and refine planned actions, ensuring continuous improvement and responsiveness to participants' needs.

Monitoring will be linked to the different stages of the intervention. Participation records will document the number and characteristics of participants, the type of activity and the level of continued engagement, with data disaggregated by gender wherever possible. Short pre- and post-activity questionnaires will assess changes in participants' understanding of energy bills, everyday energy use, energy saving options, renewable energy solutions and energy communities, as well as their confidence in applying or communicating this knowledge. For staff and intermediary organisations, the assessment will additionally examine whether the training has strengthened their ability to recognise energy-related vulnerabilities, communicate inclusively and integrate relevant guidance into their regular work.

Qualitative feedback will be collected through facilitated discussions, short reflection exercises and observations by trainers and trusted intermediaries. Particular attention will be paid to whether the formats are understandable,



accessible and relevant to participants' everyday circumstances, whether women and other vulnerable participants can contribute meaningfully, and whether any unintended barriers or burdens emerge. Findings will be reviewed at regular project meetings and used to adapt the content, duration, delivery format and supporting materials. Where activities are repeated, the revised formats will be reassessed to document whether the adaptations have improved accessibility and effectiveness. This iterative process will create a documented learning cycle and provide evidence for the replication recommendations and transferable blueprints developed by the project.

Policy integration and replication

The Austrian demonstrator shows that technical energy solutions alone are insufficient to reduce energy poverty. Their effectiveness depends equally on accessible information, trusted support structures and participation formats adapted to the everyday realities of vulnerable groups. At SHH, social workers, therapists and peer educators play an important role in translating energy related information into practical and understandable guidance. Starting with familiar topics, such as electricity bills, household appliances, heating and ventilation, allows participants to build confidence before engaging with more complex issues such as renewable energy and energy communities.

A key lesson is that participation should be understood as a gradual and flexible process. Vulnerable people may face limited time and financial resources, health related constraints, low energy literacy, language barriers or digital exclusion. Women may experience additional barriers due to lower incomes, care responsibilities and limited confidence in male dominated technical settings. Small group activities, peer learning, practical exercises and women-only workshops can help overcome these barriers. However, peer educators and intermediaries need appropriate training, accessible materials and sufficient organizational support.

The demonstrator also highlights the importance of institutional capacity building. Individual workshops can raise awareness, but lasting effects depend on whether social and housing organizations integrate energy poverty awareness and inclusive communication into their regular activities. Cooperation with SHH, Wohnpartner and Wiener Wohnen therefore supports replication by strengthening organizations that already have established access to vulnerable households.

These conclusions must also be understood in relation to the contractual, regulatory, technical and administrative barriers identified above. At SHH, the long-term energy-contracting agreement limits the property owner's immediate room for manoeuvre, while permitting requirements, funding uncertainty and fragmented eligibility conditions may delay otherwise feasible investments. In addition, digitalised procedures and technically complex information can exclude organisations and individuals with limited administrative capacity, digital skills, language proficiency or energy literacy. Policy support for inclusive energy solutions must therefore address not only the affordability of technologies, but also fossil-fuel contractual lock-ins, the continuity and accessibility of funding, the coordination of permitting procedures and the provision of technical and administrative assistance. Without such enabling conditions, the burden of



implementation risks being transferred to social institutions and vulnerable groups that have the fewest resources to manage it.

These lessons can be translated into several policy recommendations:

- Social inclusion and gender responsiveness should be explicit assessment criteria in funding programmes for energy communities, renewable energy systems and building-related measures.
- Funding programmes should cover not only technical investments, but also the costs of outreach, accessible communication, training, peer learning, administrative support and cooperation with social organisations. Funding conditions and application periods should be sufficiently stable and coordinated to enable non-profit organisations to plan integrated technical and social interventions.
- Social institutions should receive technical and administrative support to participate in renewable energy and energy sharing projects
- Participation procedures should be simple, available through both digital and non-digital channels, and supported by trusted intermediaries
- Affordability should be assessed on the basis of total housing and energy costs to prevent energy measures from causing rent or service charge increases that outweigh household savings
- Solidarity commitments, such as reserving energy or financial benefits for vulnerable households, should be anchored in the governance rules of energy communities rather than relying solely on voluntary action

Several elements of the Austrian approach are transferable to other contexts: the use of trusted intermediaries, peer-to-peer learning, practical energy literacy activities, gender responsive formats, institutional multiplier training and continuous participant feedback. However, replication should not involve copying a standard workshop program. Activities must be adapted to the target group, local languages, organizational routines, building conditions, ownership structures, regulatory framework and available technical solutions.

Replication should therefore begin with a brief assessment of local vulnerabilities, stakeholder capacities and technical conditions. Trusted organizations should be involved from the outset, and the scope of participation should be communicated clearly. Participants should understand which issues they can influence and which decisions remain the responsibility of property owners, authorities or technical experts. This avoids overburdening vulnerable groups or creating unrealistic expectations.

Feasibility of technical solutions at demonstrator level

SHH – Status Quo and feasibility study

Structural, technical and infrastructural conditions

The technical feasibility assessment for the Austrian demonstrator is based on the findings of the sister project EWW4EW, including a site visit conducted on 14 May 2025, a review of the available building documentation and energy data, and an assessment of alternative heating and renewable energy solutions. The Schweizer Haus Hadersdorf currently has a central gas-fired heating system with a capacity



of approximately 150 kW, which supplies the main and auxiliary buildings with space heating and hot water. In addition, 15 electric water heaters are used to compensate for shortcomings in the central hot-water supply. Heat is distributed through the existing radiator system.

The assessment considered district heating, different heat-pump solutions, geothermal energy, groundwater use, biomass heating and photovoltaic generation. A connection to the district-heating network is currently unavailable. Groundwater, geothermal and ice-storage solutions were not pursued further because of insufficient groundwater potential, the site's location in a landscape-protection area, dense tree cover and comparatively high costs. The two options examined in greater detail were an air-source heat pump and a central pellet-heating system.

The assessment recommends an air-source heat pump connected through the existing chimney infrastructure as the most suitable option for further technical planning. Although both shortlisted systems are technically feasible, the heat pump achieved the better overall result in the economic assessment and the MACH Value Score, which considers technical, ecological, social, user-related and regulatory criteria. The available roof area also offers potential for a photovoltaic system of approximately 23 kWp. A substantial share of the generated electricity could be consumed directly in the building, particularly if combined with the heat pump.

The immediate feasibility of the recommended solution is influenced by the existing energy-contracting agreement with Equans, which runs until 2032, as well as by permitting, financing and detailed technical-planning requirements. These conditions must be resolved before implementation. Construction and any temporary interruptions to heating or hot-water services must also be planned around SHH's residential and therapeutic activities.

Regarding energy sharing, the proposed photovoltaic system creates a potential basis for using locally generated renewable electricity within SHH and, in the longer term, through a solidarity-based Citizen Energy Community involving other buildings owned by the Evangelischer Waisenversorgungsverein. At the present stage, this represents a long-term development pathway rather than an already implemented scheme. GENDER4POWER contributes to this pathway by examining the social conditions for socially just energy sharing, including accessible communication, energy literacy, the involvement of trusted intermediaries and gender-responsive participation. The feasibility analysis therefore connects the technical potential identified by EWV4EW with the social and organizational requirements addressed by the Austrian demonstrator.

Social and organizational challenges

A central social challenge concerns the everyday energy practices of the clients. Around 40 clients live in the inpatient setting, where daily life is strongly based on autonomy and self-responsibility. This leads to highly diverse energy consumption patterns. Inefficient use of appliances, heating and ventilation, as well as high water consumption, indicate significant savings potential. At the same time, many clients have limited knowledge and awareness of energy use and are affected by



energy poverty, including low-income, high-energy costs and poor energy efficiency in their own housing situations. Since direct financial incentives are often not effective in this context, other forms of motivation and participation are needed to support energy-saving behavior.

Organizational conditions also affect the feasibility of implementation. Night-time routines, weekend arrangements and fluctuating client presence make it difficult for staff to continuously accompany measures and reinforce energy-related impulses in everyday life. For this reason, approaches must be simple, robust and compatible with the routines of a therapeutic institution.

SHH provides a highly relevant demonstrator for testing renewable energy solutions in a socially sensitive setting. The technical feasibility of photovoltaic systems, renewable energy communities and energy education measures is closely linked to social feasibility.

Successful implementation requires not only viable technical concepts, but also tailored communication, motivation, staff involvement and long-term integration into everyday routines. Within the project, SHH offers an ideal setting to test and refine such tailored communication approaches in practice. The demonstrator can therefore serve as a blueprint for how energy-related measures can be communicated, embedded and scaled in social institutions, showing that the energy transition can be both technically realistic and socially inclusive

Outlining possible energy-sharing and demand-response schemes with focus on involving vulnerable people

The photovoltaic system proposed for SHH, provides a potential basis for collective self-consumption and future energy sharing. As SHH has a high electricity demand in its common areas, the first and simplest option would be to maximise direct on-site use of the generated electricity. Direct consumption could be increased primarily through organisational flexibility. Where compatible with therapeutic routines, comfort and operational requirements, flexible electricity uses could be scheduled for periods of high photovoltaic generation. This could include laundry and dishwashing, the use of suitable workshop or kitchen equipment, electric hot-water preparation and, in the future, operation of the heat-pump system. Energy saving measures remain important for reducing overall consumption, but they should be combined with load shifting rather than used to increase consumption merely to absorb photovoltaic generation. Simple information on expected generation periods and clearly defined responsibilities for staff would support this approach without placing monitoring or optimisation duties on individual clients.

In the longer term, surplus electricity could be shared with other buildings owned by the Evangelischer Waisenversorgungsverein through a Citizen Energy Community. This model would make it possible to connect generation and consumption sites across Vienna and to combine renewable energy sharing with a solidarity based social purpose.

For the Austrian demonstrator, a solidarity-based CEC appears more suitable than individual peer-to-peer trading. Peer-to-peer arrangements place greater responsibility on individual participants and may require them to understand



contracts, prices and digital processes. A centrally administered community can reduce this burden and involve social institutions as organizational members. Under the proposed solidarity mechanism, 10% of the electricity allocated or traded through the community, or the corresponding financial value, would be donated to participating social organisations. These organisations would use the contribution to support vulnerable households through their established assistance structures. The model would therefore not require individual vulnerable households to become members of the energy community or manage a separate energy tariff. The precise form of the benefit, the eligibility criteria and the procedures for documenting its use would need to be defined in the community's governance rules together with the participating social organisations. Relevant household data would remain with the responsible social organisation and would not need to be transferred to the energy community beyond the aggregated information required for transparent monitoring.

Community batteries and time-of-use incentives are not currently priorities for SHH. Battery storage could be considered at a later stage if sufficient PV surpluses and a viable business case emerge. Time-of-use incentives and automated demand response may help align electricity consumption with periods of renewable generation, but they risk disadvantaging people who cannot shift their consumption because of health conditions, care responsibilities or institutional routines. At SHH, flexibility should therefore initially be voluntary and organizational, for example, operating suitable appliances during periods of PV generation, rather than based on variable prices or individual financial penalties.

Design energy-sharing and demand-response schemes, tailored to the needs of the demonstrator

A suitable model for SHH would be introduced gradually. In the first stage, PV electricity would primarily cover consumption within the SHH site, potentially also supporting the future heat pump system. Energy literacy activities would help staff and clients understand when electricity is generated, how it is used and how selected consumption could be shifted without compromising comfort, health or therapeutic routines.

In a second stage, SHH could join a solidarity based CEC connecting several EWW properties. The community would be responsible for electricity allocation, billing, data management and communication. SHH clients would not be expected to become individual members or manage energy transactions. Instead, they would benefit indirectly through the participation of SHH as a social institution, lower or more stable operating costs, energy literacy activities and the allocation of solidarity benefits.

The scheme should be based on the following principles:

- **Solidarity:** At least 10 % of the shared electricity, or its financial equivalent, should be donated to vulnerable households or social institutions
- **No financial disadvantage:** Participation should not require an upfront investment from vulnerable beneficiaries, and the total costs and benefits should be reviewed regularly



- Simple participation: Administrative and digital tasks should be handled centrally, with personal support and accessible information available where needed
- Voluntary flexibility: Demand shifting should respect health, comfort, care and organizational needs and should not penalise people who cannot modify their consumption
- Transparency: Allocation rules, tariffs, costs, data use and solidarity benefits should be documented in accessible language and communicated regularly
- Gender-responsive participation: Women and vulnerable groups should be actively involved in evaluating communication, support mechanisms and the social effects of the scheme

An association-based governance model is appropriate because it supports open membership, non-profit objectives and democratic decision-making based on the principle of one member, one vote. Strategic decisions would be taken by the General Assembly, while a Board would manage operations and ensure compliance. Financial oversight would be provided by elected auditors, with an internal mechanism for resolving disputes. The governance rules should also contain a formal commitment to the solidarity mechanism and safeguards against discrimination or exclusion.

This approach combines renewable self-consumption, future energy sharing and energy literacy without imposing complex responsibilities on vulnerable participants. Community batteries, automated demand response and more advanced trading models may be assessed later, but only if they provide demonstrable social and economic benefits without creating additional barriers or inequalities.

Lessons learned and reflections on the process

The Austrian demonstrator confirms that reducing energy poverty requires more than providing technical information or installing renewable energy technologies. Effective engagement depends on trust, accessible communication and formats that connect energy topics with participants' everyday experiences. Activities such as discussing electricity bills, measuring appliance consumption and identifying practical energy-saving opportunities proved more accessible than beginning with complex concepts such as energy communities or energy market regulation.

A particular strength of the approach was the involvement of trusted intermediaries. SHH staff, social workers, therapists and community professionals understand the circumstances of the target groups and can communicate energy related information in an appropriate and sensitive way. The workshops with SHH clients, Wiener Wohnen and Wohnpartner also demonstrated the value of combining short technical inputs with practical exercises, group discussions and reflection on participants' own experiences. Cooperation with established housing and social organizations additionally creates opportunities to transfer the approach beyond the immediate demonstrator.

Several challenges also emerged. Vulnerable participants may experience health related constraints, unstable personal circumstances, limited energy literacy or difficulties maintaining regular attendance. SHH's restricted staff and financial capacities made it necessary to adapt the planned activities and consider more



flexible or online formats for staff training. At the same time, online participation cannot fully replace face-to-face interaction and may create additional barriers for people with limited digital access or skills. Replication must therefore combine resource efficient formats with sufficient personal support.

Engagement with vulnerable groups highlighted the importance of avoiding deficit-oriented approaches. Participants should not be treated only as recipients of information, but as people with relevant lived experience and practical knowledge. Peer learning can strengthen trust and self-efficacy by enabling participants to exchange knowledge at eye level. However, peer educators require preparation, accessible materials and support from trained professionals; peer-based activities should complement rather than replace professional energy and social advice.

The gender perspective further showed that apparently neutral participation formats do not necessarily provide equal opportunities. Women may face additional constraints related to lower incomes, care responsibilities, time poverty and limited confidence in technical settings. Women-only workshops can provide safer spaces for questions and discussion, while gender sensitive facilitation is also needed in mixed groups. Future activities should monitor not only the number of women participating but also whether they can contribute meaningfully, gain confidence and influence the development of materials and activities.

For future iterations and replication, activities should be planned as a gradual learning process, beginning with practical everyday topics before introducing more complex energy solutions. Formats should remain short, flexible and embedded in familiar organizational settings. Clear boundaries must also be communicated: vulnerable participants should be able to contribute their experiences and preferences without being expected to assume technical, financial or administrative responsibility for an energy community.

Finally, stronger documentation and follow-up would improve the evidence base for replication. Future activities should systematically record participation, participant feedback, changes in energy literacy and the accessibility of the formats, using gender-disaggregated data where possible. Experiences should be reviewed jointly with participants and intermediaries and used to adapt training materials and communication methods. Overall, the main transferable lesson is that inclusive energy interventions work best when they combine practical learning, trusted relationships, gender-responsive participation and continued organizational support.



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Report on citizen-led strategies developed at GENDER4POWER demonstrator in Munich Neuperlach, Germany

Deliverable 4.1

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Introduction

This document is a draft of strategies for reducing energy poverty, drawing on the insights, expertise, and practical experiences gained from the GENDER4POWER pilot areas (including Ambassadors) and project partners based on previous conducted analysis (WP2) and implemented participatory activities (WP3). The validation of this draft will be the result of a collaborative process between project partners and further implemented participatory activities (WP3 and 4). This document details the core pillars of the various strategies, including the tools, stakeholders' engagements and analytical frameworks aimed to be employed throughout the development process.

Pilot context

In Germany, the GENDER4POWER project is being implemented in Neuperlach, a large district in south-east of Munich. Home to around 65,000 people, Neuperlach is Munich's largest post-war expansion and one of the largest satellite towns in Germany. The area covers about 5.9 km². Developed from 1967 to the 1980s, Neuperlach was built on former greenfield land (Perlacher Haid) to alleviate the city's post-war housing shortage. The district is dominated by large housing estates comprising numerous high-rise buildings. The layout separates roadways for cars from those for pedestrians and bicycles. The social structure is diverse: Neuperlach is characterised by a high share of residents with migratory background, alongside below-average income levels and higher unemployment. The district faces challenges in terms of energy-efficient and affordable renovation activities. The ageing building stock, public infrastructure and open spaces, which were built in the 1960s and 1970s, require adaptation to improve energy performance and meet user needs. Although significant municipal and federal investment has been allocated (e.g., over € 10 million for the initial renovation phases starting from 2022), the available resources are insufficient to fully address the social, technical, and climate adaptation needs of all neighbourhoods, especially for tenants, private owners and smaller landlords.

While there is no explicit data on energy poverty available in Neuperlach. A correlation has been suggested between economic factors such as the proportion of unemployed people among working-age residents, the proportion of residents who depend on unemployment or income support, the number of older people who receive basic security in old age, the availability of social housing, and the proportion of households who receive housing allowance. The presence of old buildings, limited household incomes and high dependency on social support make it more likely that residents will struggle to cover rising energy costs or invest in energy-efficient upgrades. In this context, energy poverty can be understood as an additional layer of vulnerability that overlaps with the broader social and economic challenges identified in Neuperlach.



Strategy on engagement of citizens and community

This strategy aims at enhancing the participation of vulnerable households in actions to alleviate energy poverty. It helps to introduce inclusive governance models at the neighbourhood and district levels, incorporating participatory decision-making methods to amplify diverse voices. Furthermore, it contributes to boosting energy literacy through user-friendly communication and gender perspectives, fostering trust in various energy solutions, and creating awareness spaces.

Engagement of social institutions and services for household identification and capacity building on energy poverty

Social services and institutions in Munich such as Sozialreferat and Caritas work every day with people affected by several layers of inequalities. Organising trainings for them on understanding energy poverty, identifying people affected by energy poverty and guidance towards relevant contact points, is essential. Cooperating with them will enable us to identify the households to co-design the technical solutions and test them.

Changing narratives, awareness raising and capacity building for households through Energie Cafés

The approach focuses on building trust in energy solutions and community power that can be achieved when several groups are coming together, through positive narratives and best practices on citizen-led and energy community work. In addition, WECF organises regular Energie Cafés in the neighbourhood of Neuperlach, serving as a space of awareness raising and where trainings will be organised.

Strengthening cooperation of existing channels and initiatives in Neuperlach

This strategy focuses on strengthening existing networks and their initiatives, through collaborative events like solar plant visits and community 'Solar Parties'. By reusing and connecting local initiatives, the project fosters long-term, inclusive impacts to address energy poverty.

Short introduction to inclusive governance models and participatory decision making, with focus on gender perspectives and fostering trust

Inclusive governance models and participatory decision making are not merely ideals; they are practical approaches to building societies that are equitable, resilient, and trusted by their citizens. By embedding gender perspectives into governance structures, institutions can ensure that proposed solutions reflect the lived realities of all people. Ultimately, fostering trust through inclusion strengthens democracy, enhances legitimacy, and creates pathways for sustainable development.

Inclusive governance refers to frameworks and practices that prioritise representation, equity, and accountability. Unlike traditional top-down models,



inclusive governance integrates diverse perspectives into formulation and implementation of solutions. It recognises that sustainable solutions to social, economic, and environmental challenges require input from all stakeholders, especially those historically excluded from decision-making.

Participatory decision making is the practical mechanism through which inclusive governance is realised. It involves creating platforms where citizens can contribute ideas, deliberate on policies, and influence outcomes. This can take the form of community consultations, participatory budgeting, or digital platforms that enable broad engagement.

Gender perspectives are central to inclusive governance because women and gender minorities often face systemic and structural barriers to participation. Despite progress, many governance structures remain male-dominated, limiting the scope of perspectives considered in decision-making. Integrating gender perspectives involves not only increasing representation but also reshaping institutional cultures to value inclusivity. Studies show that when women participate in governance, policies are more likely to address issues such as healthcare, education, and social welfare. Co-creation processes should be designed to identify and address gendered impacts of proposed solutions, ensuring equitable outcomes.

Trust is both a prerequisite and an outcome of inclusive governance. When citizens perceive that their voices are valued and their concerns addressed, they are more likely to trust institutions. Conversely, exclusion breeds scepticism and disengagement.

Strategies to foster trust include:

- Transparency in processes: Clear communication about how decisions are made and implemented.
- Feedback mechanisms: Allowing citizens to see how their input influences outcomes.
- Capacity building: Equipping marginalised groups with skills and resources to participate effectively.
- Cultural change: Promoting respect, empathy, and collaboration within institutions.
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It is against this backdrop that the GENDER4POWER strategy for engaging the citizens and community is developed.

Defining the purpose and scope of the collaborative process

Primary goal of collaboration

The collaborative process has been initiated to reduce energy poverty in Neuperlach by involving vulnerable households and relevant stakeholders in the development of inclusive, gender-sensitive solutions. Building on previous research and participatory activities, it ensures that local needs and experiences shape the strategy and are embedded in all activities. The aim is to provide safer spaces and dedicated support to households, especially women-led ones, to help them gain knowledge and understanding of existing tools to improve energy-



related comfort at home. Depending on their level of involvement in the project activities (e.g., training sessions, household energy efficiency initiatives, multipliers, etc.), participants can improve their living conditions and be included in the decision-making process regarding the energy management of their households and/or the energy transition in their neighbourhood, thereby building and strengthening community solidarity and meaningful participation.

The intended outcomes are to strengthen participation and trust, improve energy literacy, raise awareness of a gender-just energy transition, and increase citizens' sense of self-efficacy. The outcome is also to establish inclusive governance and co-create practical strategies that will make energy renovation and energy poverty measures more accessible and effective for households that are structurally vulnerable, in order to benefit the ones traditionally excluded from the energy transition and its benefits and the most impacted by energy and climate crisis.

Scope of collaboration

The collaborative process is scoped around household-level energy situations: identifying energy-related problems, assessing renovation and efficiency potential and jointly developing realistic pathways to reduce long-term costs. It includes raising awareness of renewable energy solutions and available support schemes and connecting households to relevant resources and contacts where needed. Activities include community events, knowledge transfer and workshops on energy-saving practices, renewable energy solutions, and energy communities.

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It does not extend to structural interventions outside the project's mandate. The process does not carry out large-scale renovations itself, does not provide direct financial subsidies and does not intervene directly in landlord-tenant relationships (but gives advice, helps). Where a household's issue clearly falls outside what the project can influence (e.g. building-level renovation decisions controlled by a landlord, or issues requiring legal or social-welfare intervention), the role of the collaborative process is to identify this clearly and refer the household onward, rather than to attempt to resolve it directly. This boundary is important to communicate transparently to participants from the outset, so that expectations remain realistic and trust is not undermined by promises the project cannot keep.

Success measurement

The success of the engagement and the collaborative process can be measured using several quantitative and qualitative indicators, such as:

- The number of local women, men, and gender-diverse persons reached and actively engaged in the community events, discussions, training, co-creation and decision-making processes for the energy transition in their neighbourhood.
- The level of engagement of local women and marginalised groups and the level of integration of their advice and local experience in the local strategies.
- The number of local associations and institutions involved in the activities in the project and joining on the GENDER4POWER values of alleviating energy



poverty for structurally vulnerable households through gender responsive energy solutions.

- The number of technical fixes implemented, such as number of need assessments conducted, number of renovations or efficiency measures identified as feasible, and how many were subsequently initiated. Finally, success can be measured by whether households were genuinely reached, understood and supported in a way that improves their situation.

Results and lessons learned will be shared through conferences, workshops, in person meetings and partner organisations for ensuring replication and long-term impact.

Analysis of the most suitable participatory decision-making approaches in the context of energy poverty

Participation of marginalised groups and suitable methods

Households affected by energy poverty are frequently the households least likely to participate in conventional engagement formats. This is not due to lack of interest, but rather due to structural constraints and time poverty. These are issues that a collaborative process must actively address rather than assume away.

Common barriers include:

- Lack of time: Single mothers and primary caregivers, who are disproportionately affected by energy poverty, often may have limited flexibility to attend events scheduled at fixed times.
- Physical/ digital access: Even if households are interested in participating, practical accessibility can be a barrier. People with mobility impairments, chronic illnesses, or caring responsibilities may find it difficult to attend in-person meetings, particularly if venues are not easily accessible or require longer travel times. Digital participation is not equally accessible to all citizens. Older people, low-income households, and people with less digital skills or inadequate internet access may struggle to join online events or use digital participation platforms (Doudoute, Garino 2026).
- Technical and financial literacy barriers: Participatory formats may be perceived as requiring technical vocabulary (e.g. around energy efficiency, renovation processes, or funding mechanisms) or as being conducted primarily in the local majority language. This can discourage residents with limited language proficiency or unfamiliarity with technical terms from meaningfully engaging in the process.
- Distrust and stigma: Discussing financial hardship or energy-related problems at home can carry shame, particularly in a first encounter with a new organisation. Without a relationship of trust, households may be reluctant to disclose their actual situation (Grossmann et al. 2021).

Addressing these barriers requires bringing the collaborative processes where residents already are, rather than expecting them to seek it out, for instance through cooperation with trusted local actors at community spaces, e.g., mothers with their children are often attending. Low-threshold, informal formats that allow residents to participate without prior commitment or technical knowledge are similarly important, with conversations ideally anchored in lived experience, such as households' own energy bills, rather than technical framing from the outset.



Scheduling flexibility, including the provision of childcare and multiple time slots, as well as shorter, lower-commitment forms of engagement, can help offset the time constraints faced by caregivers. Accessible, plain language materials that avoid technical jargon, combined with multilingual support help ensure that language proficiency does not determine who can meaningfully take part. Trust, given its central role in financial hardship, can only be built incrementally through consistent presence in the community rather than one-off interventions.

With respect to barriers such as the split incentive, it is beneficial to acknowledge these constraints openly rather than glossing over them. In such cases, the focus should be redirected towards what remains within a household's control, such as behavioural measures, balcony solar panels, appliance efficiency, or tenant-eligible support schemes, so that participation is encouraged even when renovation decisions lie beyond a resident's reach.

One example of a low-threshold, relationship-based format that has proven effective elsewhere is the "collective advisory assembly" approach piloted by the EmpowerMed project. Rather than one-off individual consultations, these are recurring peer-led sessions of roughly 10–30 residents facing similar energy-related difficulties, held in familiar community locations and supported by trained facilitators. Participants who have themselves navigated issues such as unpaid bills, disconnection, or unclear tariffs act as "experts by practice," offering practical guidance to newcomers on a peer-to-peer basis rather than through a top-down advisory relationship. This horizontal format has been shown to lower the trust barrier for households reluctant to disclose financial hardship to an unfamiliar institution, since the setting is non-judgemental and grounded in shared experience rather than administrative assessment. Evaluations of the approach across several European pilot sites also found it to be comparatively low-cost to run and to disproportionately reach women, who made up the majority of participants - relevant given the gendered distribution of domestic energy management responsibilities. Adapted to the Neuperlach context, a similar peer-assembly format could offer residents an accessible entry point into GENDER4POWER activities that does not presuppose prior technical knowledge or a completed renovation decision by the landlord.

Finally, peer-to-peer entry points enable residents who have already engaged to share their experience informally with neighbours. This can lower the trust barrier for new participants more effectively than institutional outreach alone, as it leverages existing social relationships rather than requiring the project to establish credibility with each household individually.

- ⇒ Given the barriers above, low-threshold, relationship-based, in-person formats are more effective in this context than formal consultation structures, which tend to reproduce existing participation gaps by favouring those already equipped with time, confidence and administrative literacy.

Selecting and reaching out to relevant stakeholders

Several stakeholders have critical perspectives and important roles in engaging citizens and communities. They have been consulted through interviews at the



beginning of the GENDER4POWER activities, as well as through Energie Cafés organisation.

- Social organisations that work with people affected by energy poverty are key stakeholders. They already have trusted relationships with vulnerable households, including low-income families, older adults, migrants, and single parents. They can help to reach groups that are often excluded from conventional participation processes, reducing barriers related to trust, language, and accessibility.
- Citizens of the demonstrator scheme can participate in collaborative sessions. Having experienced energy poverty directly or having close relatives in this situation, they can share their experiences and co-develop local solutions.
- Municipality and district committees, responsible for local planning, housing, climate, and social policies. They can integrate project outcomes into existing programmes and support long-term implementation.
- Organisations active in the housing sector play a key role in implementing building renovations and improving energy efficiency. Their involvement is essential in overcoming structural barriers, such as the landlord-tenant split incentive.
- Organisations that support tenant's needs and interests, providing legal and practical advice, such as Sozialreferat, Caritas and Mieterverein.
- In the German demonstrator, WECF collaborates with the Energiegemeinschaften to grow as an inclusive energy community and expand their project portfolio. Energiegemeinschaften München is a citizen-owned energy cooperative founded in July 2024, rooted directly in the GENDER4POWER project area. Supported by TUM through the EU-funded *Creating NEBourhoods Together* project, it enables residents, local businesses, and building owners to jointly invest in and benefit from locally generated solar power, sharing returns through dividends or discounted electricity. It provides practical experience with community-led renewable energy initiatives, demonstrating locally relevant solutions and encouraging participation and local ownership.
- Associations that provide advice on energy saving and renewable energies can contribute technical expertise and trusted energy advice to help residents understand energy-saving measures.

A key focus is strengthening existing mutual initiatives, with a particular emphasis on identifying synergies and increasing mutual impact. Each stakeholder contributes different areas of expertise and resources to ensure the collaborative process is inclusive and relevant and leads to actionable outcomes. Stakeholders will be reached through personal contact, as well as through the Ambassadors' local networks. This will be accompanied by online communication and the distribution of information material in the demonstrator.

Planning the engagement events

Engagement event 1: Engagement of social institutions and services for household identification and capacity building on energy poverty



What is the objective of the event?

WECF will organise trainings for social services and institutions with the main objectives of increasing the understanding of energy poverty, how to identify people affected by energy poverty, communication strategies and energy transition literacy, and guidance towards relevant contact points. In addition, collaboration channels will be discussed and adopted to identify a pool of people affected by energy poverty and willing to participate in the GENDER4POWER activities and develop solutions for their households.

Who should participate, and how will they be invited?

Social services and institutions such as Sozialreferat and Caritas will be invited through personal contact, in person meetings and phone calls.

When and where will the activity take place?

In their premises or in event places organised by WECF such as Einewelthaus or Perlacher Herz.

How will the event be organised, by whom?

The event will be organised by WECF, using training material provided by the GENDER4POWER consortium and adapted to the German context.

Engagement event 2: Changing narratives, awareness raising and capacity building for households through Energie Cafés.

What is the objective of the event?

The Energie Café is an innovative participation format in Munich and the 3rd of its kind in Germany. We organise them to engage women and other social groups who are traditionally underrepresented in energy discussions due to gender, age, disability, education, or religion. By meeting people in their everyday environments, it lowers barriers to participation and creates an accessible and safe space for dialogue to share experiences and ask questions. Here citizens can share experiences with their heating system, ask questions about their electricity bill or subsidies, or simply listen. Some already have a lot of knowledge, others want specific help with certain topics – everyone is welcome. They will also serve as spaces for trainings for citizens and co-creation sessions.

Who should participate, and how will they be invited?

Citizens of Neuperlach, targeted to women, single mothers, elderly people. People will be invited through online and printed info material as social media posts, flyers, posters, brochures – communication work to attract more people – potential participants can register via QR-code or e-mail or registration form of the premises the events are taking place at.

When and where will the activity take place?

The Energie Cafés are organised every other month in a relaxed atmosphere in Neuperlach. They are organised in different social and cultural locations of the neighbourhood with whom WECF collaborates, to be able to reach out to more people.



How will the event be organised, by whom?

WECF organises these Energie Cafés in cooperation with the Ambassadors who are actively promoting the events within the pilot. Participation is free and without obligation.

Engagement event 3: Strengthening cooperation of existing channels and initiatives.

What is the objective of the event?

The objective of this event is to strengthen and expand the cooperation between local organisations, community initiatives and energy actors that have already been engaged through the GENDER4POWER activities in Neuperlach. Building on the relationships established during the project, the events will create opportunities to exchange experiences, identify synergies and develop joint activities that can better support households affected by energy poverty. Particular emphasis will be placed on connecting social organisations, community groups, housing stakeholders and energy initiatives, ensuring that existing outreach channels, expertise and resources are used more effectively. By reinforcing these local networks, the project aims to create lasting support structures that continue beyond the project lifetime and contribute to a more inclusive and socially just energy transition in Neuperlach.

Who should participate, and how will they be invited?

Over the past two years, WECF has built a robust partnership with key local actors such as Kulturbunt Neuperlach, ZAK e.V., Neuperland GmbH, the RKU of the City of Munich, District Committee 16 Ramersdorf-Perlach, Munich Urban Regeneration Agencies, Münchner Wohnen, Perlacher Herz, Caritas, Solar2030, and the Energiegemeinschaften München eG cooperative. Moving forward, WECF will continue to facilitate connections through events like visits to solar plant installations paired with community “Solar Parties”, organising capacity-building and participatory approaches for people affected by energy poverty and local actors.

When and where will the activity take place?

The activities, such as the visits to solar plant installations and “Solar Parties”, will take place in Neuperlach. The specific dates and venues will be validated in the future by WECF or the local partners involved (e.g., Kulturbunt Neuperlach, Energiegemeinschaften München eG, or other collaborators).

How will the event be organised, by whom?

The events will be organised by WECF together with the members of the Energiegemeinschaften München eG and the respective initiatives and institutions.

Organising the necessary materials and tools

Training workshops for social services staff:

Training material and group session activities material, beamer, moderation materials, snacks and drinks.



Energy Cafés:

- For the Energy Cafés, drinks and snacks will be provided either by the premises or by the project team.
- Short presentations about the project, input about renewable energies and the established energy community, etc. Will be presented with a beamer.
- For co-creation, brainstorming, information-sharing, papers, worksheets, and pens are provided for the participants.
- Depending on the premises, flipcharts or whiteboards are being used to share ideas and to brainstorm together.
- In the beginning of the events, icebreakers are done to build trust – therefore different materials as yarns, balls are needed.
- Often, the premises which offer to host the collaborative events, offer these materials themselves.

Co-creation events with local initiatives:

- To be defined with the initiatives during planning of the events.

Facilitating the collaborative sessions

Challenges of facilitation:

- Lower participation of people traditionally excluded from of public spaces due to gender, age, religion, cultural background, disability, etc.
- Language
- Diverse, strong opinions might create conflict.
- Acceptance of energy topics such as renewables.
- Avoid academic formulations and wordings.
- Accessibility of technical topics.

WECF and local institutions will be the main facilitators of the events, the responsibilities within each agenda point are shared among the project team, depending on the expertise. Some might invite external experts such as energy consultants, energy community members, city planners, housing association members, etc. depending on the topics of the event.

WECF always implements feminist moderation techniques□ for the facilitation of its events to ensure inclusive, safer and collaborative environments.

Documenting outcomes and ensuring follow-up

WECF will establish an outcome and impact tracker that will include:

- Number of people affected by energy poverty identified by social services, 6 months, 1 year and 2 years after the training, checked with our contact persons.
- Number of households engaged through social services, in GENDER4POWER activities.



- Number of people joining the Energie Cafés and registering to our contact list.
- GENDER4POWER project and consortium have developed various information materials, which are shared according to target groups and needs. All training materials will be shared and available on paper on request.

Guidelines for replication in other contexts

Replication guidelines will be provided when these strategies have been collaboratively validated.

Strategy on addressing social challenges for energy poverty alleviation

Developing this strategy, demonstrators aim to comprehensively address the unique dynamics of communities, creating tailor-made solutions that consider factors such as living conditions, time resources, literacy, access to information, social exclusion, language barriers, and gender perspectives. The strategy will also evaluate methods to avoid renovation interventions leading to gentrification or eviction of vulnerable households. Furthermore, it will yield solutions for alleviating both energy related and non-energy-related (e.g., building management, split incentives, spatial issues) administrative and regulatory barriers.

Introduction and objectives

The strategy pursues two core objectives:

1. Organising demonstrators' activities to work around social barriers limiting households benefiting from energy interventions

The strategy maps the most effective channels for sharing information about available support, rights and measures in order to address the structural and social barriers that limit households' ability to take part in and benefit from energy interventions. This includes different formats, community-based networks, trusted intermediaries, such as social workers or the ambassadors and community organisations.

2. Creating inclusive pathways into decision-making spaces

Energy poverty solutions are most sustainable when affected communities can actively shape them. This objective focuses on identifying meeting formats, location, timing and facilitation methods that lower barriers to participation ensuring that people with limited time resources, mobility constraints, or low institutional trust can meaningfully engage in co-design and consultation processes.

Outline of key social challenges linked to energy poverty

Social groups most affected by energy poverty

Energy poverty does not affect everyone equally. The groups most consistently identified as vulnerable include:

- Low-income households



- Older people, particularly women living alone
- Single-parent households, the majority of which are headed by women
- Renters in poorly insulated housing
- People with disabilities
- People of Colour and those experiencing systemic discrimination
- (Birgi et al. 2022).

The disproportionate representation of women across nearly all of these categories is not coincidental. Several factors explain why women face a higher risk of being affected by energy poverty:

- Gender pay gap and pension gap: Women earn less over their lifetimes and receive lower pensions, often due to caregiving interruptions and part-time work.
- Longer life expectancy: More women live alone in old age, bearing household energy costs without a second income.
- Single parenthood: Female-headed single-parent households combine low income with high energy demand.
- Renter status: Women are overrepresented among renters, who have limited ability to invest in energy efficiency measures.
- Unpaid and imbalanced care work: Women disproportionately bear domestic and caregiving responsibilities, increasing their time at home and thus their exposure to inadequate heating or cooling conditions (Habersbrunner et al. 2024).

Emerging social consequences of non-affordability of adequate energy services

Physical health: Inadequate heating and cooling have direct consequences: respiratory illness, cardiovascular disease, and increased mortality risk, particularly for older people and children. Cold, damp housing is linked to chronic conditions that compound over time. Where households rely on inefficient or polluting heating sources, indoor air pollution adds further health risks, affecting women and children most, as they spend more time at home (Birgi et al. 2022).

Mental Health: Energy poverty is also a chronic stressor. The persistent anxiety of unaffordable bills, and living in uncomfortable conditions contributes to depression, social withdrawal and reduced life quality. These effects are less visible but well documented (Birgi et al. 2022).

Education: Children in energy-poor households struggle to study effectively due to inadequately heated rooms, lack of light, inability to charge all devices which is particularly acute in low-income and single-parent households, where children are already at higher risk of educational disadvantage (Gonzales-Pijuan 2022).

Community profiling and vulnerability assessment

Several factors shape vulnerability to energy poverty in Neuperlach:

- **Demographic factors:** The neighbourhood has a significantly older population than the Munich average, with 33,6 people over 65 per 100 working age residents (city average:25,5). Older residents, particularly



women living alone, face elevated energy costs relative to their income, higher heating needs and limited capacity to adapt.

- **Gender:** While disaggregated gender data for Neuperlach specifically is not available, national trends suggest that women are likely overrepresented among the most vulnerable subgroups: in Germany, women make up 82% of single-parent households and face a gender pension gap that leaves many older women unable to adequately heat their homes. Both groups typically combine low income with high domestic energy use (Destatis 2023; Link, Yoo 2025).
- **Socioeconomic factors:** Benefit receipt rates in Neuperlach-Mitte are up to three times the Munich city average. Long-term unemployment, reliance on transfer payments and tight household budgets leave little to no financial buffer for energy costs or investments in energy-efficiency.
- **Living conditions and housing:** Most housing dates from before 1977, before any thermal insulation standards existed, making it structurally inefficient. With 89% of units in Neuperlach publicly subsidised rental housing, residents are tenants with no ability to initiate renovations, trapping them in low energy-efficient homes.
- **Migrational background and language:** Over 60% of the population has a migration background, significantly above the city average. Language barriers and varying levels of literacy limit access to energy advice, subsidy information, capacities for bureaucratic requirements, participation in outreach programmes.

Indicators capturing vulnerability to energy poverty

- Share of households receiving welfare and unemployment benefit “Bürgergeld” for Bedarfsgemeinschaften - i.e. need-based benefit communities: the official German statistical unit comprising all persons living in one household who are jointly assessed for basic income support (Bürgergeld) eligibility, typically a claimant together with their partner and any dependent children
- Number of older women living alone
- Number of single-parent households
- Share of residents with migration background and limited German proficiency
- Age of housing stock and proportion of unsanitary residential units
- Ratio of income spent on energy costs relatively to household size

Assessment of social exclusion

Given the social challenges and the tendency for residents to orient their daily lives within the immediate neighbourhood, outreach must be delivered directly in the community, at the doorstep, within the residential area, and in accessible, low-threshold formats. Participants are likely to face compounding constraints: limited financial reserves for any upfront investment in energy efficiency, restricted digital access or literacy, care responsibilities (particularly among women) that limit



availability for appointments or workshops, and potential distrust of institutional outreach due to language or bureaucratic barriers.

Tailor-made intervention design

The strategy identifies the following solutions for the social and structural factors identified as creating vulnerability to energy poverty. They will be tested and validated and adapted during participatory events.

Living conditions: Since 89% of housing in Neuperlach is publicly subsidised rental housing built before thermal insulation and standards existed, structural renovation lies largely outside residents' and the project's control. The strategy therefore prioritises tenant-eligible, low-investment measures, behavioural energy saving practices, balcony solar panels, and appliance efficiency, while trying to engage with housing associations to raise awareness of the split-incentive problem and advocate for renovation planning that includes tenant input.

Time resources: Building on the identified barriers above, interventions must minimise the time burden of participation: flexible scheduling with multiple timeslots, hybrid events mixing in person and online events, on-site childcare during events, and short, low-commitment formats (e.g. drop-in Energie-Cafés rather than fixed term workshops) allow caregivers and those in precarious employment to engage without requiring sustained time investment.

Literacy: Materials and facilitation should avoid academic language, using plain-language explanations of topic-related materials such as energy bills, subsidies and efficiency measures. Visual aids, worksheets and hands-on formats (e.g., reviewing a household energy bill together) allow participation regardless of formal literacy level, consistent with the feminist moderation techniques WECF is already applying.

Access to information: Information will be distributed through trusted local channels rather than relying on online platforms only – flyers, posters and in-person outreach via the ambassadors and partner organisations reach residents who may lack digital access or skills. Peer-to-peer sharing among participants further extends the reach of information beyond formal outreach.

Social exclusion: Low-threshold, relationship-based formats delivered in familiar community spaces (rather than informal institutional settings) lower the barrier to entry for groups traditionally underrepresented in public and participatory spaces. Continuous presence and repeated engagement, rather than on-off interventions, build the trust needed to include residents who may otherwise self-exclude due to stigma or past negative experiences with institutions.

Language barriers: Multilingual support (e.g., English, Farsi, Ukrainian, Spanish French, etc.), whether through translated materials, interpretation at events, or facilitators with relevant language skills, ensures that limited German proficiency does not exclude residents from accessing information or participating in co-creation sessions.

Gender perspectives: Given that women, particularly older women living alone or single mothers, are disproportionately affected by energy poverty, the strategies



should apply a gender-responsive lens throughout: targeted outreach to women through, e.g., Energie Cafés, scheduling that accounts for caregiving responsibilities, safer-space facilitation techniques and attention to women's specific structural vulnerabilities in shaping intervention designs as well as the direct engagement in public spaces women frequent.

Addressing administrative and regulatory barriers

The implementation of the German demonstrator depends on several factors, such as funding access, permitting, energy-supply access and local actors' collaborations. These challenges are especially critical in addressing energy poverty, as the administrative burden often falls on organisations and households with limited time, financial means, or technical capacity. Further explanations and recommendations can be found in Deliverable 2.3 - Challenges and barriers to meet renovation targets in Germany, Situation and impact on structurally vulnerable households (Baumann et al. 2025).

Monitoring, evaluation, and adaptation

Building on the success measurement and outcome tracker outlined earlier, indicators can be split into reach/participation and wellbeing/impact:

- *Reach and participation:* number of households identified and engaged; number of people attending Energie Cafés and other participatory events and registering to the contact list; number of social organisations and institutions actively collaborating (as already tracked)
- *Wellbeing and impact:* self-reported changes in energy-related comfort at home; self-reported sense of self-efficacy and knowledge of available tools/subsidies; qualitative shifts in trust toward institutions and willingness to seek support; number of households who moved from isolated distress to connection with a relevant service (social, legal, financial)

Given the sensitivity of wellbeing as a concept, this is best captured qualitatively (short conversations, feedback at events) rather than through formal surveys, which risk reproducing the trust and literacy barriers already identified.

- Feedback is gathered through the same low-threshold, relationship-based channels already used for engagement – informal conversations at participatory events, check-ins by ambassadors, and open discussion rounds rather than written forms, to avoid excluding those with literacy or language barriers.
- Lived experience is treated as a primary source of insight, not an afterthought: Participants who have themselves experienced energy poverty can help shape what is asked and how, ensuring questions reflect real concerns rather than assumptions imposed from the outside. Where appropriate, ambassadors or peer participants could co-develop feedback formats, e.g., suggestions which questions feel comfortable or relevant to answer.
- Trust-based, incremental feedback collection (mirroring the approach to trust-building described earlier) allows households to share more over time as the relationship develops, rather than expecting full openness at first contact.

Mechanisms that ensure interventions can be adapted when conditions, needs, or barriers change



Regular reflection points built into the project cycle (e.g., after each Energie Café cycle or participatory events) where the project team reviews what worked, what barriers emerged, and adjusts formats, timing, or materials accordingly.

Direct channels back from Ambassadors and partner organisations (Caritas, Sozialreferat, etc.), who are in continuous contact with households and can flag emerging needs or shifting circumstances (e.g., new subsidy schemes, rising energy prices, changes in benefit rules), in near real time.

Flexibility in intervention design itself, since the strategy already prioritises low-commitment, adaptable formats over fixed structures, adaptation is built into the approach rather than requiring separate mechanisms.

Mechanisms for feedback and continuous improvement

A simple internal review cycle: outcomes and feedback captured through the tracker and informal channels are reviewed periodically by the project team and discussed with key partners, so lessons feed directly into the next round of activities (e.g., adjusting event locations, times, or communication materials).

Sharing outcomes back with participants and partners themselves, closing the loop by showing that feedback led to visible changes, helps sustain trust and encourages continued participation.

Feasibility of technical solutions at demonstrator level

This draft analysis will support the design of renovation interventions tailored to demonstrators and the design of eventual energy-sharing projects. It will be validated in the course of the project with the support of an energy consultant and the involved households.

In terms of renovation interventions, it will assess a range of low-tech to high-tech interventions, considering small-scale, cost-effective solutions to large-scale designs, as well as provide recommendations for materials and equipment based on the demonstrator's specific requirements, considering socio-economic characteristics, local climate factors, economy revitalisation, and job creation.

In terms of energy-sharing projects, it will support involvement of women, affected by energy poverty, in new energy-sharing projects.

Renovation intervention feasibility

Constraints influencing renovation measures implementation

Technical constraints: Much of Neuperlach's housing stock dates from the 1960s and 1970s and requires extensive modernisation to improve energy efficiency. Older buildings often need comprehensive upgrades to insulation, heating systems, and building services, making renovations technically complex and costly. In addition, expected energy savings may vary depending on actual household energy consumption and the condition of the building.

Financial constraints: High upfront renovation costs remain a major barrier, particularly for low-income households. Existing funding schemes mainly target homeowners, while most vulnerable households are tenants who cannot directly apply for renovation subsidies. Municipal and national funding is available but is



often insufficient to meet all renovation needs, and complex application procedures further limit access.

Regulatory constraints: The current legal framework primarily supports owner-occupiers rather than tenants. Renovation decisions largely depend on landlords or housing associations, creating a split-incentive problem where tenants cannot decide on building improvements.

Building conditions, ownership structures, and community capacity all influence the feasibility of renovation activities, but ownership structures are the greatest challenge in Neuperlach. Many residential buildings require significant energy-efficiency upgrades due to their age, but whether these measures are implemented depends largely on property owners. A key structural barrier is the imbalance of decision-making power between private housing companies, landlords and tenants. While tenants are directly affected by high energy costs and poor building conditions, they have very limited ability to initiate or influence renovations. This split-incentive problem reduces both the feasibility of building upgrades and residents' willingness to engage in the renovation process. Community organisations like energy communities can improve feasibility by building trust, providing information, and supporting dialogue between residents, landlords, and local authorities, but they cannot overcome these structural ownership constraints.

Risks hindering implementation and mitigation

Administrative complexity and bureaucratic funding procedures may further discourage property owners from undertaking renovations. Extensive renovation work can also cause temporary disruption for residents and, in some cases, require them to relocate temporarily. There is also a risk that renovation costs will be passed on to tenants in the form of rent increases.

These risks can be mitigated by involving landlords, housing associations, and tenants early in the planning process, providing accessible energy advice and support with funding applications, and making greater use of municipal funding schemes such as the FKG programme of the City of Munich, which reduce the share of renovation costs that can be transferred to tenants. Transparent communication, careful planning and safeguards to maintain affordable housing can further increase acceptance and support the successful implementation of such measures.

Assessing a diverse range of renovation interventions

The assessment of low-tech, medium-tech, and high-tech solutions, to determine their feasibility and effectiveness in meeting the demonstrators' needs will be conducted with an energy consultant in the next steps of the project. It will identify which renovation options (insulation, HVAC upgrades, renewable integration, smart controls) are most relevant to the demonstrator's context and how do different interventions compare in terms of cost, expected energy savings, and social impact. Finally, it will assess which interventions offer the best balance between technical performance and accessibility for vulnerable households.



Balcony PV modules and small efficiency upgrades are more accessible to lower-income households. These smaller targeted measures can achieve cost-effective energy savings and can be financed through donations or crowdfunding campaigns.

- Smart radiator thermostats
- Balcony solar modules ("Balkonkraftwerk")
- Window sealing & draft reduction
- Heat reflection foil behind radiators
- Smart plugs & energy monitoring
- LED lighting
- Efficient household appliances
- Thermal curtains
- Programmable heating timers
- Water-saving shower heads

The assessment of materials and equipment as well as the design of renovation interventions, and recommendations, will be developed and validated together with energy consultants and the households.

Energy-sharing and demand-response schemes

Communities can coordinate energy-sharing by establishing local energy communities that optimise shared solar generation, promote self-consumption, and align electricity use with periods of high renewable production to reduce grid strain. Under German law, such schemes enable solidarity-based energy sharing. To incentivise participation in demand-response programmes, financial rewards, reduced tariffs, and user-friendly technologies, such as smart meters, appliances, and home energy management systems, can encourage households to shift consumption to off-peak times.

Data from smart meters and distributed resources must be managed transparently, in compliance with GDPR, and used only for agreed purposes, with secure governance, anonymisation, and clear rules to ensure fairness, privacy, and efficient load balancing.

Outlining possible energy-sharing schemes with focus on involving vulnerable people

The Energy Community Neuperlach offers an inclusive framework for participation, using models like peer-to-peer sharing, community-owned solar generation, and the tenant electricity model (Mieterstrom) to allow residents, including tenants, to benefit from locally generated renewable energy without individual ownership.

To ensure fairness, transparency, and trust, the scheme should implement clear governance, simple procedures, multilingual communication, and active resident involvement, supported by trusted local intermediaries like ambassadors and community organisations, as part of the GENDER4POWER activities in Neuperlach.

True energy sharing, the pooling and allocation of self-generated electricity among multiple consumers and producers, is considered to hold particular potential for



making energy communities more inclusive and for reducing energy poverty, but it is not yet legally implemented in Germany. This is despite requirements set at EU level under RED II and the Electricity Directive, established frameworks already in place in countries such as Austria and Italy, and continued advocacy from citizens' energy groups including Bündnis Bürgerenergie (BBEn) and the Bundesverband Erneuerbare Energie (BEE). Some sharing models have proven workable where established market players are involved, but community-based groups and new entrants continue to face significant bureaucratic and supplier-regulation hurdles. Partial progress has been made, recent PV legislation now permits community supply within buildings, and organisational barriers for energy cooperatives have eased, yet full energy sharing across multiple consumers and producers remains unrealised. BBEn and partner organisations have put forward concrete proposals to close this gap, centred on a regional participation zone, a partial supply model that would reduce supplier obligations for small generators, and a financial incentive (an energy-sharing premium of around 2 cents/kWh) to strengthen the economic viability of citizen energy initiatives. They argue this approach would boost public acceptance, create local value, and improve network efficiency, and have pushed for its inclusion in the current legislative agenda for Neuperlach's Energy Community to draw on once the legal framework is in place (Baumann et al.2025).

Assessment of energy-sharing schemes with view on demonstrator's needs and focus on engagement of vulnerable women

Vulnerable women, particularly single mothers, older women living alone, and women with migrant backgrounds, may face financial constraints, limited time due to care responsibilities, lower digital and energy literacy, language barriers, and limited decision-making power as tenants. This often leads to distrust in new initiatives and often prevents vulnerable households from engaging. Accessible communication, trusted community networks, flexible participation formats, and targeted energy advice are therefore essential to ensure their meaningful participation.

The Energy Community combined with tenant electricity (Mieterstrom) and peer-to-peer energy sharing offers great potential. These schemes enable households to reduce energy costs without requiring home ownership, encourage collective decision-making, and strengthen local participation. Combined with tailored energy advice and community ambassadors, they can increase energy literacy, empower vulnerable women to actively participate in the energy transition, and foster long-term community engagement. But it needs the cooperation with the landlord to install PV on the roof.



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Report on citizen-led strategies developed at GENDER4POWER demonstrator in Athens, Greece

Deliverable 4.1

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Introduction

This document outlines strategies for reducing energy poverty for the Greek demonstrator of the GENDER4POWER project in Athens. It draws on the insights, expertise, and practical experiences gained from the project's pilot areas (including Ambassadors) and project partners. The strategies presented here are the result of a collaborative process between project partners, based upon analytical work conducted under Work Package 2 (WP2) and the participatory activities implemented under Work Package 3 (WP3).

The strategies are rooted in the socio-economic and institutional context of Greece, where energy poverty is a pressing challenge that disproportionately affects women and other vulnerable groups, as portrayed in previous reports of the GENDER4POWER project. According to Eurostat data, 19.2% of the Greek population in 2024 reported being unable to adequately heat their homes, which is almost double the EU average of 10.6%.¹ Additionally, Greece has a lower Gender Equality Index (57.0) compared to the EU average (63.4), with women facing a higher risk of poverty, while also remaining underrepresented in decision-making structures related to energy.²

Against this background, four core strategic pillars define the implementation roadmap for the Greek demonstrator:

1. **Strategy 1:** Citizen and Community Engagement
2. **Strategy 2:** Financial Schemes and Business Models
3. **Strategy 3:** Addressing Social Challenges for Energy Poverty Alleviation
4. **Strategy 4:** Feasibility of Technical Solutions at the Demonstrator Level

¹ <https://ec.europa.eu/eurostat/web/interactive-publications/housing-2024>

² <https://eige.europa.eu/gender-equality-index/2025>



Pilot context

The Greek GENDER4POWER demonstrator is the Hyperion Energy Community, based in urban Athens and founded in 2019 by a group of citizens committed to energy democracy, cooperative principles, and resilience amid rising energy costs. The alleviation of energy poverty was placed at the heart of its mission from the beginning, embedded in its statute and operationalised in the Energy Poverty Working Group. Hyperion currently has 122 voting members; households, social enterprises and NGOs. It operates a 500 kW solar park and allocates 5% of its energy production to 12 beneficiary households and 1 social enterprise, 11 of which are women-led. Five out of seven members of the Board of Directors are women, including the president.

The Energy Poverty Working Group of Hyperion, coordinated by two women and including four women out of seven core members, is the primary vehicle for designing and implementing inclusive energy solidarity actions within the community. Additionally, the Working Group is a key player in GENDER4POWER for integrating gender-sensitive approaches into energy poverty interventions, as the project promotes, and for collaborating with the two Shine-on Ambassadors, recruited from the community to contribute to the project. This way, Hyperion aims to further its commitment to energy poverty alleviation and gender equity by supporting at least 20 vulnerable women-led households through a combination of renewable energy access, in close partnership with GAEF, as well as national-level actors such as INZEB and EKPIZO.

Strategy on engagement of citizens and community

This strategy aims to enhance the participation of vulnerable households, and particularly women-led households experiencing energy poverty, in the design and implementation of actions to alleviate energy poverty within the Greek GENDER4POWER demonstrator. The strategy is built upon the understanding that sustainable energy transitions cannot be achieved solely through technological innovation or financial support, but require meaningful citizen participation, trust, and inclusive governance. It therefore promotes participatory approaches that enable vulnerable households to become active contributors to the development of solutions rather than passive recipients of assistance.

For the Greek demonstrator, implemented through the Hyperion Energy Community, citizen engagement is closely linked to the broader objectives of energy democracy and community resilience. The strategy combines gender-sensitive governance, community outreach, energy literacy activities and continuous stakeholder dialogue to ensure that interventions reflect the actual needs and priorities of beneficiaries. Particular emphasis is placed on women experiencing energy poverty, recognising both their disproportionate exposure to energy vulnerability and their underrepresentation in energy-related decision-making.



Short introduction to inclusive governance models and participatory decision making, with focus on gender perspectives and fostering trust

Inclusive governance models and participatory decision making are not merely ideals; they are practical approaches to building societies that are equitable, resilient, and trusted by their citizens. By embedding gender perspectives into governance structures, institutions can ensure that proposed solutions reflect the lived realities of all people. Ultimately, fostering trust through inclusion strengthens democracy, enhances legitimacy, and creates pathways for sustainable development.

Inclusive governance refers to frameworks and practices that prioritize representation, equity, and accountability. Unlike traditional top-down models, inclusive governance integrates diverse perspectives into formulation and implementation of solutions. It recognizes that sustainable solutions to social, economic, and environmental challenges require input from all stakeholders, especially those historically excluded from decision-making.

Participatory decision making is the practical mechanism through which inclusive governance is realized. It involves creating platforms where citizens can contribute ideas, deliberate on policies, and influence outcomes. This can take the form of community consultations, participatory budgeting, or digital platforms that enable broad engagement.

Gender perspectives are central to inclusive governance because women and gender minorities often face systemic barriers to participation. Despite progress, many governance structures remain male-dominated, limiting the scope of perspectives considered in decision-making. Integrating gender perspectives involves not only increasing representation but also reshaping institutional cultures to value inclusivity. Studies show that when women participate in governance, policies are more likely to address issues such as healthcare, education, and social welfare. Co-creation processes should be designed to identify and address gendered impacts of proposed solutions, ensuring equitable outcomes.

Trust is both a prerequisite and an outcome of inclusive governance. When citizens perceive that their voices are valued and their concerns addressed, they are more likely to trust institutions. Conversely, exclusion breeds skepticism and disengagement.

Strategies to foster trust include:

- Transparency in processes: Clear communication about how decisions are made and implemented.
- Feedback mechanisms: Allowing citizens to see how their input influences outcomes.
- Capacity building: Equipping marginalized groups with skills and resources to participate effectively.
- Cultural change: Promoting respect, empathy, and collaboration within institutions.



It is against this backdrop that the GENDER4POWER strategy for engaging the citizens and community is developed.

For this reason, the Greek demonstrator prioritises transparency throughout project implementation, continuous feedback mechanisms that demonstrate how participant input shapes decisions, and capacity-building activities that increase beneficiaries' confidence to engage actively in community processes.

The Hyperion Energy Community already incorporates many elements of inclusive governance that provide a strong foundation for this strategy. Equal voting rights for all members, childcare support during General Assemblies whenever feasible, a gender-balanced Board and Supervisory Council, and a predominantly women-led Energy Poverty Working Group demonstrate a long-standing commitment to inclusive participation. Furthermore, Hyperion has formally adopted the REScoop Gender Power Working Group Ambition Statement, reinforcing its commitment to gender equality within community energy governance. Previous GENDER4POWER activities have also shown that direct personal engagement through active community members is considerably more effective than formal communication channels alone. The present strategy therefore builds upon these existing strengths while further strengthening participation throughout the implementation of the demonstrator.

Defining the purpose and scope of the collaborative process

The collaborative process developed within the Greek demonstrator seeks to engage vulnerable women-led households as active participants in the design, implementation and evaluation of energy poverty alleviation actions. Rather than positioning beneficiaries as recipients of externally designed interventions, the process recognises them as partners whose lived experiences provide essential knowledge for designing practical and socially appropriate solutions.

The primary objective is to establish long-term relationships between vulnerable households and the Hyperion Energy Community, strengthening trust while increasing awareness of available energy solutions, improving energy literacy and creating opportunities for meaningful participation in community activities. Through continuous dialogue and co-creation, beneficiaries are encouraged to influence project implementation, identify priorities and contribute to the development of gender-responsive interventions that reflect their everyday realities. Ultimately, the intended outcome is that every participant feels heard, respected and able to contribute to decisions affecting their household and community.

Within the Greek demonstrator, the collaborative process encompasses several complementary activities. These include the engagement of at least 20 vulnerable women-led households, collaboration with local, national and European stakeholders, capacity-building and energy literacy activities, the co-design of energy poverty interventions, and participatory monitoring throughout implementation. The process also seeks to strengthen relationships between beneficiaries and the wider community by creating opportunities for interaction



with existing members of the Hyperion Energy Community and partner organisations.

At the same time, the collaborative process operates within clearly defined boundaries. It does not extend to technical engineering decisions concerning energy infrastructure, regulatory or legal decisions that fall within the competence of public authorities, or financial decisions beyond the scope of the project and available resources. While participants are encouraged to express preferences regarding possible interventions and implementation priorities, final decisions concerning technical feasibility, legal compliance and project management remain the responsibility of the project partners. Establishing these boundaries from the outset promotes transparency and helps avoid unrealistic expectations regarding the influence of the collaborative process.

The effectiveness of the collaborative process will be monitored through both quantitative and qualitative indicators. Particular attention will be paid to the number and diversity of vulnerable households participating in project activities, participant satisfaction with engagement processes, evidence of increased trust between beneficiaries and the energy community, and the extent to which participant feedback informs subsequent project implementation. Beyond numerical indicators, success will ultimately be reflected in the quality of the relationships established and in beneficiaries' growing confidence to participate actively in community energy initiatives.

Analysis of the most suitable participatory decision-making approaches in the context of energy poverty

The participatory approach adopted in the Greek demonstrator is informed by the findings of previous GENDER4POWER deliverables, particularly the stakeholder analysis and beneficiary engagement activities conducted under WP2 and WP3, as well as by Hyperion's long-standing experience in implementing community-based energy solidarity initiatives. Rather than applying a single engagement method, the strategy combines complementary participatory approaches that respond to the diverse circumstances of vulnerable households and acknowledge that participation itself is influenced by social, economic and gender-related inequalities.

The first challenge concerns **time poverty**. Women experiencing energy poverty frequently combine paid employment with unpaid care responsibilities, household management and other forms of informal work, leaving limited time available for participation in community activities. Conventional consultation meetings organised during standard working hours are therefore unlikely to reach the households that the project seeks to engage. The Greek demonstrator addresses this challenge by organising activities primarily during afternoons and weekends, allowing flexibility in scheduling and recognising that meaningful participation requires adapting to participants' daily realities rather than expecting participants to adapt to institutional routines.

A second challenge relates to **information, education and digital literacy**. Many vulnerable households have limited familiarity with energy communities, collective renewable energy schemes, renovation programmes or available public



support mechanisms. Administrative procedures are often perceived as complex, while technical terminology creates additional barriers to participation. Consequently, communication within the Greek demonstrator deliberately avoids specialised energy jargon and instead focuses on practical issues that participants encounter in their everyday lives, including energy bills, home comfort, renovation opportunities and strategies for reducing household energy costs. Information is presented through plain language, visual material and practical examples that allow participants to relate discussions to their own circumstances.

Greece's prolonged economic crisis, combined with previous experiences of inadequate or fragmented social support, has contributed to widespread scepticism towards institutions and externally driven programmes. Vulnerable households may also hesitate to engage with energy communities if they perceive them as technically complex or socially exclusive. Throughout the implementation of GENDER4POWER, Hyperion has consistently observed that trust is established primarily through direct interpersonal relationships rather than formal communication channels. Personal recommendations, repeated contact and continuous dialogue have proven considerably more effective than general public announcements or written invitations.

Administrative complexity also discourages participation. Navigating renovation programmes, subsidy applications or energy community procedures often requires significant time, documentation and familiarity with bureaucratic processes. Although these administrative challenges extend beyond the collaborative process itself, they influence beneficiaries' willingness to engage with the project. Participation activities therefore incorporate opportunities for individual guidance and practical support, helping participants understand available options and reducing uncertainty surrounding administrative procedures.

Finally, financial vulnerability influences participation in less visible ways. Households experiencing energy poverty often prioritise immediate needs over longer-term planning and may perceive participation in community activities as an additional burden unless tangible benefits are evident. This reinforces the importance of demonstrating early, practical value through personalised advice, trusted relationships and realistic discussions of available support rather than presenting abstract concepts related to the energy transition.

Despite these challenges, the Greek demonstrator benefits from several important strengths. Hyperion has developed a strong culture of solidarity and democratic participation since its establishment, while its Energy Poverty Working Group has cultivated long-term relationships with vulnerable households through previous community initiatives. Collaboration with organisations such as GAEF provides access to communities that would otherwise be difficult to reach, while the Shine-On Ambassadors offer interpersonal connections that facilitate communication and confidence-building. These existing relationships significantly reduce barriers to participation and create favourable conditions for sustained community engagement.

Taking these factors into account, several participatory approaches have been identified as particularly suitable for the Greek demonstrator.



- **Co-creation workshops** constitute the principal collaborative mechanism throughout the project. Organised in small groups of approximately six to twelve participants, these workshops combine practical information with facilitated discussion around themes directly relevant to participants' daily lives, including energy affordability, household comfort, available financial support and community energy opportunities. Rather than presenting predefined solutions, the workshops encourage participants to share experiences, identify common challenges and contribute to shaping project activities.
- **Community meetings and open assemblies** build upon Hyperion's existing democratic governance structures. The project seeks to lower participation barriers by providing childcare whenever feasible, organising meetings outside conventional working hours and ensuring that first-time participants receive active support from Ambassadors and members of the Energy Poverty Working Group. These adaptations aim to create an inclusive environment in which vulnerable households can participate confidently alongside existing community members.
- **Individual outreach and small-group engagement** remain the cornerstone of the Greek engagement strategy. Experience gained through the recruitment of the Shine-On Ambassadors and earlier project activities has demonstrated that one-to-one communication consistently generates stronger participation than impersonal communication methods. Individual meetings allow facilitators to understand each household's specific circumstances, provide tailored information, respond to concerns confidentially and gradually establish the trust necessary for broader participation in community activities.
- **Digital and hybrid participation** complements face-to-face engagement where appropriate. Messaging applications and online communication channels provide flexible opportunities for maintaining contact between meetings, sharing practical information and collecting feedback, particularly for participants with mobility constraints or intensive care responsibilities. Nevertheless, digital participation is regarded as complementary rather than substitutive, recognising that digital exclusion continues to affect many vulnerable households, particularly older participants.

Finally, the Greek demonstrator adopts an **iterative participation model** in which engagement continues throughout the implementation of the project rather than being limited to isolated consultation events. Beneficiaries are invited to provide continuous feedback, revisit earlier discussions and contribute to adapting project activities as implementation progresses. This ongoing dialogue strengthens participants' sense of ownership while enabling the project to respond to evolving needs and circumstances.

Selecting and reaching out to relevant stakeholders

The stakeholder engagement strategy builds upon the comprehensive stakeholder mapping undertaken during previous GENDER4POWER activities and reflects the collaborative relationships established throughout the project. The strategy recognises that addressing energy poverty requires coordinated action among organisations operating across different sectors, including energy, housing, social



inclusion, consumer protection and gender equality. Rather than engaging stakeholders through isolated consultation exercises, the Greek demonstrator seeks to establish long-term collaborative relationships based on complementary expertise and shared objectives.

At the local level, the Hyperion Energy Community acts as the central coordinating actor, providing the governance structure through which project activities are implemented and beneficiaries participate in community energy initiatives. The Energy Poverty Working Group plays a particularly important role in coordinating engagement activities, identifying beneficiary needs and maintaining continuous communication with participants throughout implementation.

The collaboration with **GAEF** is fundamental to the engagement strategy. Through its direct contact with vulnerable women and extensive experience supporting socially vulnerable groups, GAEF facilitates access to potential beneficiaries while contributing valuable knowledge regarding their everyday challenges and support needs. Informational meetings, outreach activities and beneficiary support are therefore organised jointly whenever possible, allowing each organisation to contribute its respective expertise.

Additional local and national stakeholders -including Rock the Block, EKPIZO, Desmi, INZEB and Co-Hab- contribute specialised knowledge relating to renovation, consumer protection, community energy, housing and social inclusion. Their involvement strengthens the multidisciplinary nature of the project while broadening opportunities for dissemination and future replication. European-level collaboration, including exchanges with organisations such as WISE and REScoop.eu networks, supports policy learning and the wider dissemination of project outcomes.

Stakeholder participation extends beyond information sharing. Local organisations contribute directly to identifying beneficiary needs, refining engagement methodologies, co-organising events and evaluating pilot activities. Consumer organisations provide insights into household rights and affordability challenges, while research organisations contribute evidence supporting monitoring and evaluation. National and European stakeholders help assess the replicability of project outcomes and identify opportunities for policy development beyond the Greek demonstrator.

Experience throughout GENDER4POWER has shown that stakeholder engagement is most successful when built upon existing interpersonal relationships rather than formal institutional contacts alone. Consequently, outreach prioritises direct communication between individuals, bilateral meetings and practical collaboration on specific activities instead of relying exclusively on large public events or written correspondence. While public events remain valuable for increasing visibility, sustained collaboration is primarily achieved through continuous interaction, mutual trust and shared implementation of project activities.

Communication with beneficiaries follows similar principles. Personal invitations delivered by community members, telephone conversations, face-to-face meetings



and messaging applications constitute the primary communication channels. Throughout all engagement activities, particular emphasis is placed on using accessible language that focuses on people's everyday lives rather than technical concepts. Discussions therefore begin with issues such as reducing energy bills, improving household comfort or accessing available support before introducing broader concepts related to community energy and the energy transition.

Equally important is the project's commitment to respectful communication. Beneficiaries are never approached as passive recipients of charity or technical assistance. Instead, the engagement strategy recognises them as equal partners whose experiences are indispensable for developing effective and socially just energy poverty interventions. Although this participatory approach requires greater time and continuous relationship-building, it provides a stronger foundation for long-term community engagement and increases the likelihood that project outcomes will remain relevant beyond the lifetime of GENDER4POWER.

Planning the engagement events

The engagement activities implemented within the Greek demonstrator are designed to support beneficiaries throughout the entire implementation process, from initial outreach and recruitment to active participation, co-creation and continuous feedback. Rather than relying on one-off consultation events, the strategy adopts a progressive engagement model in which relationships are gradually strengthened through repeated interactions and tailored support.

The first stage consists of **informational sessions for prospective beneficiaries**, organised jointly by Hyperion and GAEF. These introductory meetings aim to explain the objectives of GENDER4POWER, introduce the concept of community energy in accessible language, present the support available through the project and clarify what participation entails. Particular attention is paid to creating a welcoming environment in which participants feel comfortable discussing their needs and asking questions without fear of judgement. The sessions avoid technical terminology and instead frame discussions around issues directly relevant to participants' daily lives, including energy bills, home comfort and available support mechanisms.

Following the introductory meetings, beneficiaries are invited to participate in **energy literacy workshops** focusing on practical aspects of household energy management. Topics include:

- understanding electricity bills,
- identifying opportunities for reducing energy consumption,
- navigating available renovation programmes and subsidies,
- and exploring the role of energy communities in addressing energy poverty.

Rather than delivering technical lectures, these workshops encourage discussion and exchange of experiences among participants, allowing learning to emerge from both expert knowledge and lived experience.



A central component of the engagement strategy consists of **individual follow-up meetings** between beneficiaries, the Shine-On Ambassadors and members of Hyperion's Energy Poverty Working Group. These meetings provide tailored support according to each household's specific circumstances, allowing facilitators to respond to individual concerns, clarify administrative procedures and maintain continuous contact throughout the implementation of the project. Experience within GENDER4POWER has demonstrated that this personalised accompaniment is essential for building trust and sustaining participation, particularly among households experiencing multiple forms of vulnerability.

Throughout implementation, **co-creation workshops** provide opportunities for beneficiaries to contribute directly to the development and refinement of project activities. These workshops encourage participants to reflect on their experiences, identify practical challenges and propose improvements to the interventions being implemented. Rather than validating predetermined solutions, the workshops create a space for collaborative problem-solving in which participants influence the direction of the pilot and ensure that activities remain responsive to evolving needs.

The strategy also includes **community reflection sessions**, organised at key milestones during project implementation. These meetings allow beneficiaries, community members and partner organisations to evaluate progress, discuss lessons learned and identify opportunities for adapting future activities. By integrating reflection into implementation rather than postponing evaluation until project completion, the Greek demonstrator promotes continuous learning and adaptive management.

Whenever possible, engagement activities are organised during afternoons or weekends in accessible community venues that minimise travel requirements and accommodate participants' work and care responsibilities. Invitations are primarily delivered through direct communication by trusted community members, supplemented where appropriate by telephone calls and messaging applications. This approach reflects the project's experience that interpersonal communication consistently achieves higher participation rates than impersonal outreach methods.

Organizing the necessary materials and tools

The engagement process is supported by a combination of practical facilitation materials and inclusive organisational arrangements designed to minimise barriers to participation.

Facilitation materials include workshop presentations, printed information sheets, visual aids, worksheets, flipcharts, feedback questionnaires and digital communication tools used to maintain contact with participants between meetings. Whenever appropriate, practical demonstrations and real-life examples are incorporated to make technical concepts more accessible and directly relevant to participants' everyday experiences.



Equally important are the practical arrangements surrounding each activity. Accessible venues are selected to reduce mobility barriers, refreshments are provided whenever feasible to create an informal and welcoming atmosphere, and childcare support is offered where possible to facilitate the participation of parents and carers. These organisational choices are not considered ancillary to the engagement process but integral components of an inclusive participation strategy.

All communication materials are developed using plain language and gender-sensitive communication principles. Technical terminology is avoided whenever possible, while examples and visual material reflect the diversity of participating households, including older women, single-parent families, migrant backgrounds and different housing situations. Particular care is taken to avoid paternalistic language that portrays beneficiaries as passive recipients of support. Instead, communication consistently recognises participants as partners whose knowledge and experiences contribute directly to project implementation.

Collaborative sessions are jointly facilitated by the Shine-On Ambassadors, members of Hyperion's Energy Poverty Working Group and project partners, with support from collaborating organisations such as GAEF. This co-facilitation model combines technical expertise with trusted interpersonal relationships and creates an environment in which participants can discuss sensitive issues—including financial hardship, inadequate housing conditions and energy insecurity—in a respectful and supportive setting.

The complementary expertise of the two Shine-On Ambassadors represents a particular strength of the Greek demonstrator. One Ambassador brings experience in psychotherapy and the facilitation of support groups, contributing to the creation of safe spaces where participants feel comfortable expressing concerns and sharing their own experiences. The second Ambassador contributes technical expertise in architecture and housing inequalities, enabling complex issues related to renovation and energy performance to be translated into accessible and practical guidance. This combination of technical competence and social sensitivity has proven particularly effective in establishing trust with vulnerable households.

Facilitators employ active listening, open-ended questioning and collaborative problem-solving throughout all engagement activities. Participants are encouraged to reflect on their own experiences before discussing potential solutions, ensuring that proposed interventions emerge from the realities of everyday life rather than from predetermined assumptions. Sessions are intentionally flexible, allowing sufficient time for discussion and adaptation of agendas according to participants' priorities.

Several challenges are anticipated throughout the engagement process, including limited participant availability, varying levels of energy literacy, digital exclusion and initial mistrust towards institutions. These challenges are addressed through repeated opportunities for participation, flexible scheduling, personalised follow-up and continuous adaptation of communication methods according to participants' preferences and circumstances.



Facilitating the collaborative sessions

Systematic documentation and continuous follow-up are essential components of the engagement strategy, ensuring that participation generates tangible improvements in project implementation rather than remaining a series of isolated events.

Outcomes from engagement activities are documented through attendance records, facilitator notes, workshop reports, feedback questionnaires and qualitative reflections prepared by the Shine-On Ambassadors and members of the Energy Poverty Working Group. Where participants provide consent, photographs and additional documentation are collected to support dissemination and project reporting. Particular attention is given to documenting not only participation rates but also participants' perspectives, concerns, suggestions and examples of good practice emerging during implementation.

Feedback collected throughout the project is regularly reviewed within Hyperion's Energy Poverty Working Group and discussed with project partners to inform subsequent activities. This continuous learning process enables engagement methods, communication approaches and support mechanisms to be adapted as beneficiaries' needs evolve. In this way, monitoring becomes an integral part of project implementation rather than a purely administrative reporting exercise.

Follow-up with beneficiaries takes place through individual meetings, telephone conversations, messaging applications and subsequent community events. Maintaining continuous contact beyond individual workshops ensures that beneficiaries remain informed about project developments and future opportunities for participation. The project therefore seeks to establish long-term relationships with participants rather than limiting engagement to the duration of specific activities.

Documenting outcomes and ensuring follow-up

The experience of the Greek demonstrator demonstrates that effective citizen engagement in the context of energy poverty depends fundamentally on trust, long-term relationship building and genuine collaboration with vulnerable households. Technical expertise and financial support alone are insufficient if beneficiaries do not feel respected, listened to and actively involved in shaping the solutions intended to improve their everyday lives.

Several elements of the Greek engagement strategy have strong potential for replication in other contexts. These include the use of trusted community intermediaries and ambassadors, close collaboration between energy communities and local social organisations, gender-sensitive facilitation, personalised outreach, flexible participation formats and continuous feedback mechanisms throughout project implementation. These approaches can be adapted to different institutional and cultural settings while preserving their central objective of strengthening participation among vulnerable households.



At the same time, successful replication requires adaptation to local circumstances. Stakeholder networks, governance arrangements, housing conditions and social characteristics differ significantly between regions and countries. Rather than replicating specific activities unchanged, future initiatives should preserve the underlying principles of inclusiveness, transparency, co-creation and community ownership while adapting implementation methods to local needs, capacities and institutional contexts.

The principal lesson emerging from the Greek demonstrator is that meaningful participation is a gradual process built through consistency, mutual respect and continuous dialogue. Investing time in establishing interpersonal relationships may initially appear resource-intensive, but it ultimately produces stronger engagement, more relevant interventions and greater community ownership of project outcomes. These principles provide a robust foundation for developing inclusive and gender-responsive energy poverty interventions that remain effective beyond the duration of individual projects

Guidelines for replications in other contexts

Based on the experience of the Greek demonstrator to date, there are lessons gathered that can be useful for potential replication. We have discovered that personal, direct outreach is decisive. Formal communication channels have consistently proven ineffective for reaching vulnerable households in the Greek context. Investment in one-to-one relationship-building, through community intermediaries and in collaboration with institutions that have existing direct contact with vulnerable households, is essential. Additionally, community ownership drives sustainability. Recruiting ambassadors from within the existing community, rather than hiring external facilitators, ensures that engagement activities are embedded in pre-existing trust networks and that the collaborative process can continue beyond the formal project timeline. It is important to remember that flexibility is inevitable in such projects, because vulnerable women, especially those with care responsibilities or precarious employment, are only able to participate if activities are scheduled at times and in formats that accommodate their lives. Afternoon and weekend scheduling, accessible venues, childcare provision, and flexible agenda structures are all necessary adaptations. Gender balance in facilitation matters, with the combination of two women Ambassadors and a broader women-populated project team has been particularly effective in creating welcoming, gender-sensitive spaces. The importance of trust should be underlined: information about available energy support actions is only effective if it is delivered through direct channels and accompanied by genuine support to navigate complex processes.

Regarding the sustainability of the energy poverty alleviation measures in new contexts, a key step is formalising the role of Ambassadors (or trusted intermediaries) through integration into the governance structures of the energy community (e.g., as members of the Energy Poverty Working Group). Furthermore, collaborative relationships with local municipalities and social services should be established, which will provide both access to vulnerable households and the institutional legitimacy needed to sustain engagement. Maintaining accessible shared resources (folders, messaging groups, session



summaries) enables continuity even when key individuals change. Finally, embedding gender perspectives into standard community practices, ensures that gender issues are part of the community's everyday life, tracked and reported regularly.

Apart from the Shine-On Ambassador model, which stood out for its originality and contribution to the project, other elements of the Greek demonstrator approach with strong replication potential include the collaboration with municipal actors, particularly GAEF, which has been effective in bridging the gap between the energy community and households that would not otherwise engage. This model is replicable wherever municipal social services or energy poverty offices exist. In addition, the combination of co-creation workshops, accessible energy literacy training, one-to-one follow-up sessions, and general flexibility and interpersonal approach is a model that can be replicated after taking into account different community sizes, cultural contexts, and target groups. Elements that require significant adaptation for other contexts include scheduling and logistics (which must be adapted to the daily rhythms of the local target group), language and communication (materials and facilitation must be tailored to local languages, literacy levels, and cultural norms), and contracting mechanisms for Ambassadors (which reflect national tax and legal requirements).

Strategy on financial schemes

Developing this strategy, demonstrators will identify financing tools for projects, emphasizing the use of available resources and exploring solutions from energy communities and public financing programs at different levels. It will help the demonstrators create and test unique financing mechanisms with support from private investors, ESCOs, banks, foundations, and impact funds.

Brief overview of the strategy's purpose

Financial limitations remain one of the principal obstacles preventing vulnerable households from participating in the energy transition. While numerous public programmes supporting energy efficiency and renewable energy deployment exist in Greece, households experiencing energy poverty frequently lack the financial resources, administrative capacity or technical support required to benefit from them. Women-led households are often disproportionately affected due to lower average incomes, greater care responsibilities, housing insecurity and more limited access to financing.

The Greek GENDER4POWER demonstrator therefore adopts a financing strategy that extends beyond identifying funding opportunities. Instead, it seeks to create an enabling financial ecosystem that combines public funding, community solidarity, private-sector contributions and innovative community financing mechanisms to reduce barriers to participation. Rather than expecting vulnerable households to independently navigate complex financial instruments, Hyperion Energy Community and Electra Energy Cooperative assume an active intermediary role, mobilising available resources and tailoring support according to the needs of each beneficiary.



The strategy builds upon Hyperion's long-standing commitment to energy solidarity and Electra's experience in supporting citizen-led energy initiatives, while drawing on partnerships developed throughout GENDER4POWER with civil society organisations, private companies and public authorities.

Challenges faced by demonstrators in accessing finance

Experience gained during GENDER4POWER confirms that financial exclusion is rarely caused by the absence of funding opportunities alone. Instead, multiple barriers interact to prevent vulnerable households from accessing available support.

Administrative complexity remains one of the most significant obstacles. Public renovation programmes, including **Exoikonomo**, require extensive documentation, technical studies, contractor coordination and prolonged administrative procedures. Even when subsidy rates reach very high levels for vulnerable households, many potential beneficiaries lack the confidence, time or technical knowledge necessary to complete the application process successfully.

Financial barriers persist even within highly subsidised schemes. Upfront expenses, temporary liquidity requirements and uncertainty regarding reimbursement frequently discourage participation among households already experiencing financial insecurity.

Housing tenure introduces an additional challenge. A considerable proportion of households experiencing energy poverty are tenants and therefore have limited ability to undertake structural renovations or apply directly for renovation subsidies. The well-documented split incentive between landlords and tenants significantly reduces investment in improving the energy performance of rental housing while leaving tenants exposed to high energy costs.

Gender further influences access to finance. Women-led households often experience lower disposable incomes, interrupted employment histories and greater unpaid care responsibilities, reducing both their financial flexibility and their capacity to engage with demanding administrative procedures. These structural inequalities highlight the importance of providing financial support alongside personalised guidance and accompaniment throughout the implementation process.

Financial landscape analysis

Rather than relying on a single financing mechanism, the Greek demonstrator combines multiple complementary funding sources that together increase the accessibility and sustainability of energy poverty interventions.

Public funding constitutes one important pillar of the strategy. National programmes such as Exoikonomo provide significant opportunities to finance energy renovations, while additional national and European funding instruments may support complementary activities. Within GENDER4POWER, project partners actively assist beneficiaries in identifying suitable programmes, understanding eligibility requirements and navigating application procedures. This



accompaniment recognises that information and administrative support are often as valuable as financial assistance itself.

Community solidarity represents a second pillar. Hyperion has embedded energy poverty alleviation within its organisational model since its establishment, dedicating part of the benefits generated through community renewable energy projects to vulnerable households. The community has already committed that at least 5% of future project revenues and income flows will continue to be directed towards energy poverty actions, ensuring that community development simultaneously generates social value.

A third pillar consists of private-sector partnerships established during the implementation of GENDER4POWER. Electra Energy has successfully negotiated strategic collaborations with private companies willing to contribute products and services supporting vulnerable households. These partnerships include donations of insulation materials and other energy efficiency equipment, reducing intervention costs while increasing the number of households that can be supported within the available project resources.

The project also mobilises complementary social support through its collaboration with GAEF and other local organisations. Depending on beneficiary needs, this includes facilitating access to donated household appliances, energy-saving devices and other practical forms of assistance that improve living conditions while reducing energy consumption.

Finally, GENDER4POWER directly finances selected interventions supporting vulnerable households. These include upgrades of heating and cooling systems where existing equipment creates severe energy inefficiency or inadequate thermal comfort, together with the installation of demand-response technologies that enable households to optimise energy consumption, reduce electricity costs and actively participate in future flexibility services.

Ultimately, the Greek demonstrator aims at reducing dependence on an individual financing mechanism while increasing flexibility to respond to different beneficiary circumstances.

Advantages and disadvantages of the available financial schemes for energy communities with focus on women

Each financing mechanism presents distinct strengths and limitations when evaluated from the perspective of vulnerable households.

Public renovation programmes offer the largest potential financial support and enable comprehensive energy renovations. However, they remain administratively demanding and frequently exclude households unable to provide initial financing or satisfy ownership requirements. These barriers disproportionately affect women, tenants and lower-income households.

Private donations and corporate partnerships provide rapid, flexible support that can be targeted according to individual household needs. Their principal limitation lies in their dependence on voluntary contributions and their limited scalability compared with institutional funding programmes.



Community solidarity mechanisms constitute one of the strongest features of the Hyperion model. Because resources are generated within the energy community itself, beneficiaries are supported through a long-term solidarity framework rather than isolated charitable interventions. Furthermore, these mechanisms strengthen beneficiaries' relationship with the community, promoting participation rather than dependency. Their limitation is naturally linked to the financial capacity of the community and the scale of renewable energy projects implemented.

Project-funded interventions offer immediate and highly targeted benefits, allowing households to receive practical improvements without navigating complex funding procedures. Nevertheless, these resources remain limited to the duration and budget of the project.

For women-led households, combining these different financing mechanisms offers considerably greater flexibility than reliance on any single funding source. Tailored financing packages allow support to be adapted according to household circumstances, housing tenure and individual priorities.

Criteria for selecting suitable financing scheme(s) and selection of best suitable financial scheme(s)

The Greek demonstrator evaluates financing opportunities according to a set of complementary criteria rather than prioritising financial performance alone.

Selected mechanisms should minimise upfront costs for beneficiaries, reduce administrative burden, promote inclusion of vulnerable households regardless of tenure status, support women's participation in community energy initiatives and remain financially sustainable beyond the lifetime of GENDER4POWER.

Particular emphasis is placed on mechanisms capable of combining financial support with personalised technical assistance, recognising that effective access to finance depends equally on guidance, trust and administrative support.

Within this framework, the preferred financing model is not a single instrument but an integrated approach combining public funding, community solidarity, private-sector contributions and innovative community financing.

Action plan for testing the selected financial scheme(s)

One of the most promising developments emerging from the Greek demonstrator is Hyperion's ongoing work on an **on-bill financing model** for residential energy renovations.

The proposed model aims to enable households to undertake renovation measures without prohibitive upfront investment by recovering costs gradually through the energy savings generated after renovation. Rather than treating renovation as a one-off construction project, Hyperion is exploring a **Renovation-as-a-Service** approach in which technical support, financing and long-term community participation are integrated into a single service for its membership base and external interested individuals.



Consistent with Hyperion's solidarity principles, the model is being designed so that **at least 5% of revenues generated through future projects and financing activities are reinvested in supporting vulnerable households**, thereby creating a self-reinforcing solidarity mechanism that expands as the community grows.

During GENDER4POWER, Electra and Hyperion will continue testing the practical feasibility of combining this financing approach with public renovation programmes, private donations and targeted project funding, while documenting lessons learned regarding administrative implementation, beneficiary acceptance and long-term financial sustainability. This Citizen-Led Renovation (CLR) scheme is emerging in Greece.

Policy Recommendations

The development of the Greek demonstrator highlights that energy communities can play a structural role in reducing energy poverty, but only if public policy recognises and supports their intermediary function. The experience of Hyperion and Electra Energy confirms a broader finding emerging from European community energy practice: vulnerable households rarely lack interest in affordable clean energy, but they often lack the capital, administrative capacity, technical knowledge or housing rights required to participate on equal terms. This is particularly relevant for women-led households, tenants and households facing multiple forms of vulnerability.

Future policies should simplify administrative procedures, expand financing opportunities for tenants, promote community-based financing mechanisms and recognise the intermediary role that energy communities can play in supporting vulnerable households throughout renovation processes.

Greater policy support for solidarity-based community financing, on-bill financing mechanisms and citizen-led renovation services would enable energy communities to play a significantly larger role in addressing energy poverty while strengthening citizen participation in the energy transition. In more detail:

First, public funding programmes should explicitly recognise energy communities as implementation partners for energy poverty alleviation. National renovation schemes such as Exoikonomo remain essential, but their impact on vulnerable households is limited when households must navigate complex procedures alone. Dedicated funding calls should therefore support energy communities that prioritise energy poverty actions, including technical assistance, outreach, beneficiary accompaniment and administrative support. This is consistent with the SOCIALNRG/Life COMET/ GENDER4POWER [policy brief](#), which recommends funding calls specifically designed for energy communities addressing energy poverty and emphasises the need for predictable financial frameworks and capacity-building support.

Second, inclusive energy communities should be rewarded through targeted incentives. Projects that allocate a defined share of energy, revenues or services to vulnerable households could benefit from simplified procedures, priority access to relevant public schemes, tax incentives, de-risking instruments or dedicated



inclusiveness labels. Such incentives should be designed carefully to avoid creating additional administrative burdens for small community-led initiatives. In the Greek case, Hyperion's commitment to direct at least 5% of future project income flows towards vulnerable households provides a practical model that could be recognised and encouraged through public policy.

Third, public authorities should support low-barrier participation models for vulnerable households. In Greece, energy-vulnerable households can receive energy through energy communities without necessarily becoming formal members, allowing simple, anonymous and accessible inclusion subsidised by paying members. This principle is highly relevant for policy design: vulnerable households should be able to benefit from community energy without facing upfront membership costs, complex procedures or stigma.

Fourth, policy frameworks should promote inclusive financing mechanisms, including zero-interest loans, guarantees and on-bill financing for vulnerable households. Hyperion's emerging on-bill financing model for renovation-as-a-service directly responds to this need by seeking to reduce upfront investment barriers and recover costs gradually through achieved savings. Such models require regulatory clarity, consumer protection safeguards and access to de-risking capital, particularly where they target households with limited financial security.

Fifth, national and local authorities should strengthen trusted intermediaries. The Greek demonstrator shows that organisations such as Hyperion, Electra and GAEF are essential because they combine technical knowledge, community building and access to vulnerable households. Policy should therefore fund the time and capacity required for outreach, case-by-case support, coordination with social services and follow-up after interventions. Similarly, investing in municipalities, NGOs, social services, housing providers and other reliable actors is able to identify beneficiaries and help them navigate participation opportunities.

Finally, policy should link community energy, energy efficiency and demand reduction. The AccelerateEU [seven-point plan](#) stresses that energy efficiency must remain a first principle: clean energy production should be accompanied by reduced demand, building improvements and protection of vulnerable consumers from price shocks. For the Greek demonstrator, this supports the integrated approach combining collective renewable energy, renovation support, donated materials, heating/cooling upgrades and demand-response technologies. Energy communities should therefore be supported not only as renewable energy producers, but as local platforms capable of coordinating energy savings, flexibility, renovation and social solidarity.

Guidelines for replications in other contexts

The principal lesson emerging from the Greek demonstrator is that financing should be understood as a **support ecosystem rather than an individual funding instrument**.

The combination of community solidarity, public funding, strategic partnerships with private companies, project resources and innovative financing mechanisms



provides substantially greater flexibility than reliance on a single source of finance. Equally important is the intermediary role played by organisations such as Hyperion and Electra, which reduce administrative barriers, build trust and tailor financing pathways according to each beneficiary's circumstances.

Although the precise financing instruments available will differ across countries, this integrated approach is readily transferable to other community energy initiatives seeking to combine energy poverty alleviation with social inclusion and gender-responsive implementation.

Strategy on addressing social challenges for energy poverty alleviation

Introduction and objectives

Energy poverty is not solely an issue of inadequate income or high energy prices. It is a multidimensional form of vulnerability shaped by housing quality, social exclusion, insecure employment, unequal access to information, gender inequalities and institutional barriers. These factors frequently interact, making it difficult for vulnerable households to access existing support mechanisms even when financial assistance is available.

Within the Greek demonstrator, this strategy seeks to ensure that energy poverty interventions respond to these wider social dimensions. Building on the evidence collected through GENDER4POWER and Hyperion's long-standing work on energy solidarity, the strategy proposes tailor-made interventions that address the specific needs of vulnerable households while promoting social inclusion, gender equality and long-term community resilience. Particular attention is given to preventing unintended consequences such as renovation-related displacement, strengthening beneficiaries' capacity to participate in decision-making, and reducing administrative barriers that often exclude those most in need.

Outline of key social challenges linked to energy poverty

Energy poverty in Greece has been studied over the past decade from a socio-economic perspective, with research showing that the phenomenon is shaped by a series of social factors such as education, income level, dwelling characteristics, migration background, and employment status.³

As already discussed in D2.1 one in five households in Athens experiences some form of energy poverty. A significant portion of the Athenian housing stock is old and poorly insulated, which is a primary driver of energy poverty in the urban area. Approximately 20–22% of households report an inability to keep their homes adequately warm, while 19% live in dwellings plagued by leaks, dampness, or mould. Roughly 27% of households in the Athens Urban Area experience arrears

3

Halkos, George, and Ioannis Kostakis. 2023. "Exploring the Persistence and Transience of Energy Poverty: Evidence from a Greek Household Survey." *Energy Efficiency* (Dordrecht) 16 (6): 50. <https://doi.org/10.1007/s12053-023-10137-1>.



on their energy bills. Vulnerability is notably gendered; in Athens municipal programs, approximately 80% of energy-poor applicants are women. This is compounded by the fact that 41% of lone mothers in Greece are at risk of poverty, compared to 29% of lone fathers. As already discussed in D2.6, several structural obstacles hinder effective intervention for these vulnerable groups. The reimbursement model of government grants is a major deterrent, as low-income applicants often cannot afford the high upfront costs or the navigating bureaucratic procedures. In the private rental sector, landlords often lack the motivation to invest in energy upgrades because the tenant is the one who benefits from reduced bills, while tenants lack the authority to initiate structural changes. Many vulnerable residents, particularly the elderly and those with limited education, lack the technical and digital literacy required to engage with modern energy-saving technologies or complex subsidy applications. Finally, there is a significant social risk that building upgrades may lead to rent increases, forcibly displacing the very low-income tenants the projects intend to help.

Community profiling and vulnerability assessment

Understanding vulnerability is the foundation of any effective strategy for energy poverty alleviation. The [Syn-Energeia](#) project, whose criteria have informed this strategy, organises vulnerability indicators into three interrelated categories: economic, housing-related, and social. Together, these offer a multidimensional picture of household-level vulnerability. Economic indicators include spending more than 10% of household income on energy; receiving the Guaranteed Minimum Income (KEA) or the Social Household Tariff (KOT A, B, or C); being listed on the Vulnerable Customer Register; experiencing frequent power cuts due to debt; having accumulated arrears on electricity bills; unemployment; receiving housing or heating allowances; and benefiting from Social Grocery schemes or the TEBA fund. Housing-related indicators focus on the physical and energy condition of the dwelling: the age of the residence and its structural issues (leaks, dampness, mould); the inability to maintain adequate warmth in winter or adequate cooling in summer; a low Energy Performance Certificate (EPC) class (C or below); the type and fuel source used for heating; the climate zone of the location; and tenure status (owned vs. rented, apartment vs. detached house). Social indicators capture demographic and health characteristics: single-parent or large family composition; elderly household members; belonging to groups at risk of poverty or social exclusion, including people with disabilities, refugees and migrants, Roma, ex-prisoners, victims of domestic violence or trafficking, and survivors of natural disasters; and the presence of household members with chronic health conditions, mental illness, or dependency on mechanical life support.

Tailor-made intervention design

The social challenges identified through the analytical work of GENDER4POWER and the implementation experience of the Greek demonstrator demonstrate that energy poverty cannot be addressed through standardised interventions. Households experiencing energy poverty are far from homogeneous; they differ in their housing conditions, tenure status, income stability, family composition, health conditions, digital literacy, access to information and social support networks. Consequently, interventions must be tailored to the specific forms of vulnerability



experienced by each household, rather than applying uniform technical or financial solutions.

Within the Greek demonstrator, this person-centred approach is implemented through close collaboration between Hyperion Energy Community, Electra Energy Cooperative, GAEF and the Shine-On Ambassadors. Rather than beginning with predefined technical measures, each beneficiary household is first engaged through individual meetings and needs assessments that explore not only energy consumption patterns but also broader social circumstances affecting the household. Particular attention is paid to identifying barriers that may prevent beneficiaries from participating in renovation programmes, community energy initiatives or other support mechanisms. This allows project partners to combine technical, financial and social interventions according to each household's specific needs.

An important lesson emerging from the implementation of GENDER4POWER is that communication itself constitutes an intervention. Vulnerable households are frequently confronted with complex technical terminology, fragmented information and administrative procedures that discourage participation before support measures are even considered. Furthermore, many beneficiaries have previously experienced paternalistic approaches that frame them solely as recipients of assistance rather than active participants in shaping solutions. The communication strategy adopted by the Greek demonstrator therefore prioritises plain language, practical examples and continuous dialogue. Discussions focus on everyday concerns such as thermal comfort, affordability, health and quality of life rather than abstract concepts relating to energy efficiency or decarbonisation. Information is delivered primarily through trusted interpersonal relationships, recognising that the recruitment of beneficiaries and the work of the Shine-On Ambassadors consistently demonstrated that personal contact is considerably more effective than impersonal communication channels.

The strategy also recognises that renovation interventions, while capable of significantly improving energy performance and household wellbeing, may themselves generate new forms of vulnerability if implemented without adequate safeguards. Renovation is frequently experienced by vulnerable households as a stressful process involving administrative complexity, uncertainty regarding costs, disruption of daily routines and concerns about interactions with contractors or property owners. For tenants, these concerns are often accompanied by fears that improvements may ultimately result in rent increases or even displacement. Consequently, GENDER4POWER approaches renovation not simply as a technical intervention but as a social process requiring continuous accompaniment and trust-building.

Where renovation measures are proposed, beneficiaries are supported throughout the process by project partners, who provide guidance on available funding opportunities, administrative procedures and technical options. Particular emphasis is placed on reducing uncertainty by explaining each stage of the renovation process, coordinating with relevant stakeholders where appropriate and ensuring that beneficiaries remain actively involved in decisions affecting their



homes. Whenever possible, renovation measures prioritise solutions that minimise disruption while delivering tangible improvements in thermal comfort and energy affordability.

The Greek demonstrator also recognises the broader social risks associated with urban regeneration and energy renovation. Although the scale of interventions implemented within GENDER4POWER is limited, the project acknowledges that large-scale renovation programmes can unintentionally contribute to gentrification, increased housing costs and the displacement of vulnerable residents if social safeguards are absent. For this reason, the strategy promotes equitable renovation practices that prioritise existing residents, maintain housing affordability and strengthen community resilience rather than contributing to residential turnover. Particular attention is paid to ensuring that interventions do not disproportionately benefit property owners while leaving tenants exposed to rising housing costs or eviction risks. While these structural issues cannot be fully addressed within the scope of the project, recognising them explicitly enables the demonstrator to advocate for more socially just renovation policies and to avoid reinforcing existing inequalities.

The interventions developed within GENDER4POWER combine immediate support measures with longer-term structural objectives. Short-term interventions focus on addressing urgent household needs through personalised mentoring, energy advice, accompaniment during administrative procedures, access to community energy initiatives, targeted financial support, donated materials and equipment, heating and cooling upgrades, and the installation of demand-response technologies. These measures aim to improve household wellbeing within the lifetime of the project while strengthening beneficiaries' capacity to participate in future energy transition initiatives.

At the same time, the project seeks to contribute to longer-term structural change by documenting barriers encountered by beneficiaries and translating these experiences into policy recommendations. Particular emphasis is placed on addressing the structural causes of energy poverty, including housing affordability, inadequate building quality, split incentives between landlords and tenants, limited access to affordable renovation finance and insufficient recognition of the social role of energy communities. Through collaboration with local and national stakeholders, the Greek demonstrator seeks not only to improve individual households' living conditions but also to contribute to more inclusive housing, energy and social policies that reduce vulnerability beyond the duration of the project.

Effective implementation of these interventions depends upon strong partnerships between organisations possessing complementary expertise. Hyperion provides the community governance framework and long-term relationship with beneficiaries, Electra contributes technical expertise and coordination of energy transition activities, GAEF facilitates access to vulnerable households and social support services, while additional partners contribute knowledge relating to housing, consumer protection and policy development. This multidisciplinary



approach recognises that no single organisation possesses all the competencies required to address the complex social dimensions of energy poverty.

Ultimately, the Greek demonstrator adopts the principle that successful energy poverty interventions should strengthen people's capabilities rather than simply reduce their energy bills. By tailoring support to individual circumstances, reducing barriers to participation and protecting beneficiaries from unintended social consequences, the project seeks to ensure that the energy transition contributes to greater social inclusion, gender equality and community resilience, rather than reinforcing existing inequalities.

Addressing administrative and regulatory barriers

Throughout the implementation of GENDER4POWER, it became evident that many of the barriers preventing vulnerable households from improving their energy conditions are not purely financial or technical. Instead, beneficiaries frequently encounter administrative, legal and organisational obstacles that significantly reduce their ability to access existing support mechanisms, even when financial assistance is available. Consequently, addressing these non-energy-related hurdles forms an integral part of the Greek demonstrator's strategy.

One of the most significant challenges concerns the split incentive between landlords and tenants. A considerable proportion of households experiencing energy poverty live in rented accommodation and therefore have limited authority to undertake renovation measures or invest in energy efficiency improvements. At the same time, landlords often have little incentive to improve building performance when energy costs are borne by tenants. Although this structural issue extends beyond the scope of GENDER4POWER, the project seeks to mitigate its effects by prioritising interventions that can be implemented regardless of ownership status, supporting dialogue between tenants and property owners where appropriate, and promoting financing models that reduce investment limitations while protecting affordability.

Building governance also presents important challenges, particularly in multi-apartment buildings that dominate the Athenian housing stock. Collective decision-making procedures, fragmented ownership structures and differing financial capacities among residents often delay or prevent renovation projects. The Greek demonstrator therefore promotes early engagement with residents, clear communication regarding the benefits and implications of proposed interventions, and collaboration with building representatives wherever feasible. By supporting dialogue and building trust among residents, the project seeks to reduce conflicts that frequently hinder collective renovation initiatives.

Beneficiaries often face extensive documentation requirements, multiple interactions with public authorities, technical terminology and lengthy application procedures when attempting to access renovation programmes or social support schemes. Rather than expecting households to navigate these processes independently, Hyperion and Electra provide practical guidance and accompaniment throughout the process, helping beneficiaries understand eligibility requirements, prepare documentation and coordinate with relevant



stakeholders. This intermediary role significantly reduces administrative burden while increasing confidence among participants.

The Greek demonstrator also recognises the importance of cooperation with municipalities, consumer organisations and other public institutions responsible for housing, social policy and energy. Strengthening these collaborations not only facilitates project implementation but also enables project partners to communicate practical barriers encountered by beneficiaries, contributing to the development of more accessible and socially responsive public policies. In this way, the project addresses administrative barriers not only at the household level but also through institutional dialogue aimed at improving the broader enabling environment for energy poverty alleviation.

Another important bottleneck identified during the implementation of GENDER4POWER is **renovation stress**. For many vulnerable households, undertaking renovation is perceived not as an opportunity but as a source of uncertainty and anxiety, and this poses a personal-level admin barrier. Beyond financial considerations, beneficiaries frequently express concerns about navigating administrative procedures, coordinating contractors, understanding technical information, coping with temporary disruption of their daily routines and making decisions about unfamiliar technologies. These concerns are often intensified for older people, single-parent households and individuals already experiencing financial insecurity or poor mental wellbeing. In some cases, the anticipated stress associated with the renovation process discourages households from applying for support altogether, even when substantial financial assistance is available. The Greek demonstrator therefore treats renovation as a social process rather than solely a technical intervention. Beneficiaries are accompanied throughout the different stages of implementation through personalised guidance, continuous communication and coordination with trusted organisations. This accompanying role seeks to reduce uncertainty, build confidence and ensure that households remain actively involved in decisions affecting their homes, ultimately increasing both participation and the long-term success of renovation measures.

Monitoring, evaluation, and adaptation

The monitoring and evaluation framework of the Greek demonstrator is designed to assess not only the measurable outcomes of project interventions, but also the social processes through which these outcomes are achieved. In line with the overall philosophy of GENDER4POWER, evaluation extends beyond technical performance and energy savings to examine how participation, empowerment and community resilience evolve throughout implementation. Given the multidimensional nature of energy poverty, success cannot be adequately captured through quantitative indicators alone. Instead, the Greek demonstrator adopts a mixed-methods approach that combines technical and socio-economic indicators with qualitative evidence derived from beneficiaries' lived experiences.

Quantitative monitoring focuses on the implementation of project activities and their immediate outcomes. Indicators include the number of households supported, participation rates in engagement activities, uptake of available support mechanisms, implementation of renovation or energy efficiency measures,



installation of heating and cooling systems or demand-response technologies, estimated reductions in energy expenditure, and participation in community energy initiatives. These indicators provide an overview of project implementation and allow progress to be monitored against the objectives established within GENDER4POWER.

However, the Greek demonstrator recognises that many of the most significant impacts of community-based energy poverty interventions are social and therefore cannot be measured solely through numerical indicators. For this reason, qualitative evaluation forms an equally important component of the monitoring framework. Information is collected through beneficiary interviews, facilitator observations, workshop reports, feedback questionnaires, reflective discussions within the Energy Poverty Working Group, and continuous documentation by the Shine-On Ambassadors. Particular attention is given to understanding how participants perceive the accessibility of interventions, whether they feel listened to and respected throughout the process, and whether the support provided responds to their actual needs and priorities.

A central feature of the evaluation approach is the inclusion of **beneficiaries' lived experiences throughout the implementation process**. Rather than treating evaluation as an activity conducted at the end of the project, beneficiaries are invited to provide continuous feedback as interventions progress. Their perspectives are used to identify emerging barriers, assess the relevance of planned activities and adapt implementation whenever necessary. This iterative learning process ensures that interventions remain responsive to changing household circumstances while strengthening participants' role as active contributors to project development rather than passive recipients of support.

The Shine-On Ambassadors play a particularly important role in this process. Through their continuous contact with beneficiary households, they are able to document aspects of participation that are often overlooked by conventional monitoring frameworks, including changes in trust, confidence, motivation, perceived self-efficacy and willingness to engage with the wider community. These observations provide valuable insights into the social impacts of the project and complement more conventional quantitative indicators.

An equally important objective of the monitoring framework is to **capture processes of empowerment and community-building** that emerge through participation. One of the most encouraging observations during the implementation of the Greek demonstrator has been the gradual transformation of some beneficiaries from recipients of support into active contributors within the community. **Several women who initially joined the project seeking assistance have subsequently expressed a willingness to "give back"** according to their own skills, experiences and capacities. Rather than viewing solidarity as a one-directional transfer of resources, they have proposed offering services such as aesthetic treatments, language lessons, accounting support and other forms of mutual assistance to fellow community members. Although these initiatives may appear modest in economic terms, they represent an important indicator of social empowerment and community resilience. They demonstrate



increased confidence, strengthened social ties and a growing sense of belonging within the energy community.

This emerging culture of reciprocity reflects one of the core principles underpinning Hyperion's approach to energy solidarity. The objective of the project is not merely to reduce energy bills or improve housing conditions, but to create opportunities for beneficiaries to participate in community life according to their own abilities and aspirations. Monitoring these reciprocal relationships therefore provides valuable evidence of the project's broader social impact, illustrating how inclusive energy communities can strengthen social capital while avoiding relationships based solely on dependency or charitable assistance.

Continuous learning and adaptation are embedded throughout the implementation process. Monitoring results are regularly reviewed by Hyperion's Energy Poverty Working Group together with Electra Energy Cooperative, the Shine-On Ambassadors and collaborating partners. Emerging challenges, participant feedback and lessons learned are discussed collectively and used to refine communication approaches, support mechanisms and intervention design. This adaptive management process allows the project to respond to new needs as they arise while continuously improving the effectiveness and inclusiveness of its activities.

Ultimately, the evaluation framework seeks to assess whether the Greek demonstrator contributes not only to alleviating energy poverty but also to strengthening social inclusion, gender equality and community resilience. By combining quantitative evidence with the lived experiences of participants, the project aims to generate a more comprehensive understanding of how community-based approaches can create lasting social change. The lessons documented through this monitoring process will also inform the replication of GENDER4POWER approaches in other contexts, demonstrating that the success of energy poverty interventions should be measured not only by technical outputs, but also by the extent to which they empower people, foster solidarity and strengthen communities.

Policy integration and replication

One of the principal objectives of the Greek demonstrator is to ensure that the knowledge generated through GENDER4POWER extends beyond the immediate implementation of the pilot. The project therefore seeks to translate practical experience into recommendations that support more inclusive and socially responsive energy, housing and social policies. The lessons emerging from the implementation of the Greek demonstrator demonstrate that addressing energy poverty requires integrated interventions that combine technical solutions with social support, gender-sensitive approaches and strong community engagement. Equally important, they show that community energy initiatives can play a much broader role than renewable energy production by acting as local platforms for solidarity, empowerment and social innovation.

A key lesson emerging from the demonstrator is that energy poverty should not be addressed exclusively through energy policy. Housing quality, social protection, public health, gender equality and access to social services all influence



households' ability to achieve adequate energy conditions. Consequently, policy responses should adopt integrated approaches that recognise the interconnected nature of these challenges. In particular, energy renovation programmes should be designed alongside measures that protect affordability, prevent displacement and accompany vulnerable households throughout the renovation process, rather than focusing exclusively on technical performance and energy savings. Addressing renovation stress, administrative complexity and housing insecurity should be recognised as essential components of successful renovation policies.

The project also demonstrates the value of community energy organisations as trusted intermediaries between public programmes and vulnerable citizens. Throughout GENDER4POWER, Hyperion Energy Community and Electra Energy Cooperative assumed roles extending well beyond technical implementation by supporting beneficiaries in understanding available opportunities, navigating administrative procedures, identifying appropriate interventions and maintaining continuous communication throughout the process. These intermediary functions significantly reduced bottlenecks to participation while strengthening trust and long-term engagement. Public policy should therefore recognise and support this role through dedicated funding for community outreach, technical assistance, beneficiary accompaniment and local capacity building, complementing investments in physical infrastructure.

An equally important lesson concerns the importance of gender-sensitive support structures. Throughout beneficiary engagement activities and the work of the Shine-On Ambassadors, project partners observed that many women participants felt more comfortable discussing sensitive issues -including financial hardship, housing insecurity, family responsibilities and everyday challenges associated with energy poverty- with other women who could relate to their lived experiences. This facilitated the development of trusting relationships and enabled more open conversations about issues that might otherwise have remained unspoken. While support mechanisms should always remain inclusive and responsive to individual preferences, the experience of the Greek demonstrator suggests that involving women in outreach, facilitation and peer-support roles can significantly strengthen engagement with women experiencing energy poverty. Future policies and funding programmes should therefore encourage the development of women community leaders, ambassadors and peer-support networks as part of broader strategies addressing energy poverty and social inclusion.

Another important lesson concerns the need to integrate social safeguards into renovation and energy transition policies. Measures promoting energy efficiency should explicitly consider potential risks related to housing affordability, displacement and unequal access to benefits. Renovation policies should incorporate safeguards against gentrification and involuntary displacement, while ensuring that tenants and other vulnerable groups are not excluded from the benefits of public investment. Protecting vulnerable households requires not only improving building performance but also ensuring that the social outcomes of renovation are equitable, inclusive and responsive to local housing conditions.

The Greek demonstrator further highlights the importance of **multidisciplinary collaboration**. Energy poverty is a multidimensional challenge that cannot be



effectively addressed by energy actors alone. The collaboration established between Hyperion, Electra Energy Cooperative, GAEEF, consumer organisations, local stakeholders and beneficiaries demonstrated that combining technical expertise with social support, community engagement and local knowledge leads to more effective and durable interventions. Future policy frameworks should therefore facilitate collaboration across sectors, recognising that energy, housing, social welfare and gender equality policies are intrinsically interconnected.

Many of the approaches developed within the Greek demonstrator have considerable replication potential. These include personalised beneficiary support, close collaboration between energy communities and social organisations, the use of community intermediaries, gender-sensitive communication and facilitation, participatory monitoring, and the integration of technical, financial and social interventions within a single support framework. Similarly, the emphasis placed on accompaniment throughout the renovation process, rather than limiting support to financial assistance, represents a transferable practice that can help increase participation among households that would otherwise remain excluded. While implementation should always be adapted to local institutional, regulatory and social contexts, these principles provide a robust foundation for community-led initiatives addressing energy poverty across Europe.

The Greek demonstrator eventually reinforces one of the central messages of GENDER4POWER: effective energy poverty alleviation depends not only on the availability of financial resources or technological solutions, but also on trust, solidarity, social inclusion and meaningful participation. Community-based approaches that recognise vulnerable households as active partners rather than passive beneficiaries are better positioned to deliver lasting improvements in energy conditions while simultaneously strengthening confidence, social cohesion and community resilience. Embedding these social dimensions into future policy frameworks, could transform energy communities to important actors in delivering a just and inclusive energy transition that leaves no one behind.

Feasibility of technical solutions at demonstrator level

The technical strategy of the Greek demonstrator aims to identify, assess and implement technical interventions that are both feasible under the current regulatory and market conditions and capable of effectively addressing the needs of vulnerable women experiencing energy poverty. In line with the overall objectives of GENDER4POWER, **technical feasibility is not assessed solely from an engineering perspective but through an integrated approach that combines technical performance, social acceptability, economic accessibility and long-term sustainability.**

The strategy builds upon the technical analyses undertaken throughout the project, including Energy Performance Certificates (EPCs), household visits, technical assessments and continuous dialogue with beneficiaries. Rather than prescribing identical solutions for all participants, interventions are co-designed with each household, taking into account individual needs, housing conditions, ownership status, financial constraints and beneficiaries' willingness to undertake renovation works.



The Greek demonstrator follows the **"energy efficiency first" principle**, recognising that reducing energy demand often provides faster, more affordable and socially acceptable benefits than increasing energy production alone. Consequently, the strategy combines renewable energy, energy efficiency, demand-response technologies, efficient heating and cooling systems and behavioural interventions into a complementary package of measures capable of improving household wellbeing while strengthening the resilience of the Hyperion Energy Community.

Renovation intervention feasibility

The feasibility of renovation interventions has been assessed individually for participating households, recognising that technical suitability varies considerably depending on building characteristics, ownership structures and household circumstances. In addition to engineering considerations, the project evaluates social, financial and administrative feasibility before proposing renovation measures.

Energy Performance Certificates have already been prepared for participating households, providing detailed information on existing building performance, major sources of energy losses and potential improvement measures. For the household selected for the project's full renovation intervention, all required legal documentation, technical assessments and feasibility studies have been completed, allowing implementation to proceed once the remaining administrative procedures are finalised.

The project also recognises that technical feasibility extends beyond the physical characteristics of buildings. As mentioned in the previous strategy regarding social challenges, renovation itself can constitute a source of stress and uncertainty for vulnerable households. Administrative procedures, coordination with contractors, temporary disruption of daily routines and concerns regarding housing security frequently discourage participation, even when financial support is available. Consequently, not all participating households are expected to undertake deep renovation works. Instead, interventions are selected through a co-design process that balances expected energy savings with each household's preferences, capacities and living circumstances.

Ownership structures present an additional challenge. Many beneficiaries are tenants or live in multi-apartment buildings where renovation decisions depend upon landlords or collective agreement among multiple owners. In many cases, the house is rented out also, which makes a deep renovation almost impossible under current social conditions. These structural constraints significantly influence the feasibility of comprehensive renovation measures and reinforce the importance of complementary interventions that can be implemented regardless of ownership status.

The project therefore adopts **a flexible approach in which deep renovation represents one possible pathway among several**, rather than the default solution for all beneficiaries.



Assessing a diverse range of renovation interventions

Recognising the diversity of beneficiary needs and housing conditions, the Greek demonstrator assesses **renovation options** across different levels of intervention, **ranging from low-cost household improvements to more comprehensive building renovation measures.**

For households where extensive renovation is technically, financially and socially feasible, the project supports deeper renovation interventions based on the recommendations derived from the Energy Performance Certificates and technical assessments. These interventions seek to improve thermal comfort, reduce energy demand and enhance the long-term performance of the dwelling.

At the same time, the project acknowledges that smaller interventions can often deliver substantial benefits while avoiding many of the barriers associated with large-scale renovation. Consequently, particular emphasis is placed on cost-effective measures that reduce thermal losses and improve household comfort with limited disruption.

An important example already implemented within the Greek demonstrator concerns the replacement of external doors in one beneficiary household. Together with personalised energy-saving advice provided by project partners, this relatively modest intervention resulted in a remarkable reduction in household electricity consumption. Monthly electricity consumption decreased from approximately **750 kWh during January**, when heating demand was highest, to **92 kWh during June**, despite continued cooling needs during the summer period. While seasonal variations naturally influence consumption patterns, the intervention demonstrates the significant impact that targeted building improvements combined with behavioural support can achieve without requiring deep renovation.

The project also secured a substantial donation of insulation materials through collaboration with a private company, allowing additional households to benefit from building envelope improvements that would otherwise not have been financially feasible. These partnerships illustrate how relatively simple interventions can generate meaningful improvements in energy performance while expanding the number of beneficiaries that can be supported within available resources.

In parallel, the Greek demonstrator places increasing emphasis on addressing **summer energy poverty**. While energy poverty in Greece has traditionally been associated with inadequate winter heating, increasingly frequent and intense heatwaves make access to adequate cooling equally important for household health and wellbeing. Consequently, the project includes the replacement of inefficient air-conditioning systems and explores complementary passive cooling measures, including external shading solutions, recognising cooling as an essential energy service rather than an optional household expense.

Overall, the assessment demonstrates that combining low-cost improvements, targeted renovation measures and behavioural support frequently offers the best balance between technical effectiveness, affordability and social acceptance.



Assessing materials and equipment use

The selection of materials and equipment within the Greek demonstrator is guided by technical performance, affordability, durability, ease of installation and suitability for vulnerable households. Rather than prioritising highly sophisticated technologies, the project favours interventions capable of delivering measurable improvements while remaining accessible and easy to maintain.

Building materials are selected according to the climatic conditions of Athens and the specific characteristics of the participating dwellings. The donation of insulation materials secured through private-sector partnerships has enabled the implementation of additional energy efficiency measures while reducing overall intervention costs.

Similarly, heating and cooling equipment is selected based on energy efficiency, reliability and expected reductions in household electricity consumption. Existing systems in vulnerable households are frequently outdated and highly inefficient, contributing significantly to energy expenditure while failing to provide adequate thermal comfort. Replacing these systems therefore generates both energy and social benefits.

Demand-response equipment has also been incorporated into the demonstrator as an important complement to traditional energy efficiency measures. Rather than requiring major structural interventions, these technologies enable households to optimise electricity consumption, improve awareness of consumption patterns and prepare for future flexibility services within increasingly decentralised electricity systems.

The project is also exploring the future potential of balcony photovoltaic systems as an emerging solution particularly relevant for apartment residents and households unable to install conventional rooftop systems. Given the increasing grid saturation challenges currently affecting photovoltaic deployment in Greece, modular balcony systems may provide an additional pathway for expanding access to renewable energy among urban households. Although these systems are not yet implemented within the demonstrator, they represent a promising direction for future community-based energy initiatives.

Feasibility of energy-sharing projects and demand-response schemes

One of the central objectives of the Greek demonstrator is to increase the participation of vulnerable women in collective renewable energy through Hyperion Energy Community. However, the implementation of this objective has been significantly affected by regulatory changes introduced during the lifetime of the project.

The introduction of Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs) into the Greek legislative framework in late 2024 fundamentally changed the operating environment for previously established energy communities. Existing communities were effectively prevented from



developing additional photovoltaic capacity unless they first transitioned to the new legal framework.

This unexpected legislative change directly affected Hyperion and created a substantial implementation challenge. Following discussions within the General Assembly, members decided to change the legal status of the community in order to comply with the new legislation. Although this decision was taken in early 2025, the legal transition proved considerably more time-consuming than anticipated and was only completed in May 2026.

Consequently, there is a significant risk that the project target of installing 1 MW of additional photovoltaic capacity will not be achieved within the project timeframe. Although preparatory activities and permitting procedures have already begun, administrative delays, permitting requirements and grid capacity constraints continue to limit implementation. Under the currently secured capacity, only four to five beneficiaries can be integrated into the collective self-consumption scheme.

Rather than postponing implementation, the Greek demonstrator adopted an adaptive technical strategy that diversified the portfolio of interventions while maintaining the project's overall objectives. At the time of writing, four women have already been successfully integrated into Hyperion's collective self-consumption scheme, while five additional households have received demand-response equipment. One household has already benefited from targeted building envelope improvements.

In parallel, Electra Energy and Hyperion are developing **citizen-led renovation initiatives** and broader energy-saving campaigns among community members. By reducing electricity demand within the existing community, part of the photovoltaic capacity currently allocated to existing members can effectively be released and redistributed to additional vulnerable households. This approach represents a practical response to current regulatory constraints while remaining fully consistent with the **"energy efficiency first"** principle promoted by the European Union. Rather than relying exclusively on expanding renewable energy production, the demonstrator illustrates how demand reduction, behavioural change and community solidarity can together increase the social impact of existing renewable energy assets.

At the same time, Electra and Hyperion continue to participate in public consultations and provide recommendations to the competent Ministry regarding improvements to the regulatory framework governing energy communities. These efforts aim to remove administrative bottlenecks and create more favourable conditions for future expansion of collective renewable energy projects benefiting vulnerable households.



Design renovation interventions that address the unique challenges faced by the demonstrator

The renovation interventions implemented within the Greek demonstrator have been designed through an integrated assessment process that combines technical feasibility with the social, financial and behavioural characteristics of participating households. Rather than applying a uniform renovation package, GENDER4POWER adopts a person-centred approach, recognising that households experiencing energy poverty differ considerably in terms of housing conditions, ownership status, energy consumption patterns, financial capacity and willingness to undertake renovation works.

The design process began with detailed household assessments, including home visits and the preparation of Energy Performance Certificates (EPCs), which enabled project partners to identify the principal sources of energy losses, evaluate existing heating and cooling systems and estimate the potential impact of different intervention scenarios. For the household selected for the project's comprehensive renovation intervention, all necessary legal documentation, technical assessments and feasibility studies have already been completed, providing the technical basis for implementation.

The assessment process also considered the specific characteristics of Athens' building stock. Most participating households live in older apartment buildings with limited thermal insulation, outdated windows and doors, inefficient heating systems and fragmented ownership structures that complicate large-scale renovation works. These characteristics significantly influence the feasibility of technical interventions and require solutions that balance expected energy savings with practical implementation constraints.

As highlighted throughout the social strategy, technical feasibility cannot be assessed independently from beneficiaries' lived realities. During the implementation of GENDER4POWER, it became evident that renovation itself can become a hurdle to participation. Administrative complexity, uncertainty regarding contractors, disruption of daily routines and concerns about the overall renovation process frequently generated what the project refers to as renovation stress. Consequently, renovation measures were not imposed according to engineering criteria alone but co-designed with beneficiaries through continuous dialogue. Individual needs assessments explored household composition, existing health conditions, thermal comfort requirements, family responsibilities, ownership status and participants' willingness to engage in renovation activities.

This participatory approach resulted in different levels of intervention depending on each household's circumstances. While one household proceeded towards a comprehensive renovation, other beneficiaries preferred smaller interventions that could generate measurable improvements without causing extensive disruption. This flexibility has proven essential for maintaining participation while ensuring that interventions remain technically feasible and socially acceptable.

The broader GENDER4POWER methodology also includes the use of digital twins and simulation tools to support renovation planning and assess the expected performance of different intervention scenarios. Within the Greek demonstrator,



the application of digital twins has been tailored to the scale and characteristics of the pilot. Given the relatively limited number of participating households and the diversity of their living conditions, household-level technical assessments and feasibility studies constituted the primary decision-making tools for selecting appropriate interventions. At the same time, a digital twin is currently being developed for the dwelling selected for the project's comprehensive renovation intervention. The digital twin will support the detailed design of the renovation by enabling the simulation and comparison of different technical solutions, estimating their expected energy performance and informing the final selection of renovation measures before implementation. This targeted application demonstrates how digital tools can complement personalised technical assessments, providing additional evidence for decision-making while remaining proportionate to the scale and objectives of the demonstrator.

Recommendations on materials and equipment

The selection of materials and equipment follows the principle that technical solutions should not only maximise energy performance but also remain affordable, durable, easy to maintain and appropriate for the socio-economic realities of vulnerable households. Rather than promoting highly sophisticated technologies, the Greek demonstrator prioritises practical interventions capable of generating significant improvements in household comfort and energy affordability while minimising implementation complexity.

Building envelope improvements represent one of the most cost-effective intervention categories identified during the project. Particular emphasis is placed on reducing thermal losses through improved insulation and replacement of inefficient windows and doors. These measures are especially suitable for the Athenian building stock, where ageing construction and poor thermal performance are major contributors to energy poverty. Through a strategic collaboration established by Electra Energy, the project secured a substantial donation of insulation materials from a private company, significantly expanding the number of households that can benefit from energy efficiency improvements despite the limited project budget.

Heating and cooling equipment has also been assessed according to energy efficiency, expected reductions in electricity consumption and suitability for the local climate. Existing systems in many participating households are characterised by poor efficiency, resulting in high operating costs and inadequate thermal comfort. Replacing outdated equipment with modern high-efficiency systems therefore offers immediate benefits in terms of both energy savings and improved living conditions.

The increasing frequency and intensity of heatwaves in Greece has also highlighted the growing importance of summer energy poverty. Many vulnerable households either lack adequate cooling equipment or avoid using existing appliances because of the associated electricity costs. Consequently, the project explicitly incorporates cooling into its technical strategy through the planned replacement of inefficient air-conditioning units and the introduction of complementary passive cooling measures, including external shading solutions where appropriate. These



interventions recognise cooling as an essential energy service rather than an optional household expense, contributing both to improved health outcomes and reduced energy vulnerability during the summer months.

Demand-response technologies constitute another important category of equipment assessed within the demonstrator. Five participating households have already received demand-response devices enabling them to optimise electricity consumption and better understand their energy use. Beyond immediate savings, these technologies contribute to increasing beneficiaries' energy literacy and prepare households for future participation in flexibility services as electricity systems become increasingly decentralised.

Looking beyond the current project, the Greek demonstrator is also exploring the future potential of balcony photovoltaic systems. Given the increasing grid saturation challenges affecting conventional rooftop photovoltaic installations in Greece, balcony PV represents a promising solution for apartment residents and households unable to install traditional rooftop systems. Their relatively low cost, modular character and suitability for urban environments make them particularly attractive for future community energy initiatives targeting vulnerable households, although regulatory developments will ultimately determine their wider applicability.

Energy-sharing and demand-response schemes

Collective self-consumption through energy communities remains the cornerstone of Hyperion's long-term strategy for addressing energy poverty. By enabling households to benefit from locally produced renewable electricity, energy-sharing schemes reduce electricity expenditure while strengthening citizens' active participation in the energy transition. Unlike individual rooftop photovoltaic installations, collective self-consumption also enables households that would otherwise be excluded, including apartment residents and vulnerable households with limited financial resources, to participate in renewable energy generation.

Despite the challenges, the project has already succeeded in integrating four vulnerable women into Hyperion's existing collective self-consumption scheme. While the currently secured generation capacity is sufficient to support only four to five beneficiaries, the experience gained throughout the project demonstrates both the technical feasibility and the social value of community energy as a long-term mechanism for alleviating energy poverty.

Recognising the regulatory limitations affecting photovoltaic deployment, the Greek demonstrator progressively strengthened the role of demand-response as a complementary pathway for supporting beneficiaries. Demand-response technologies enable households to shift electricity consumption towards periods of lower demand or higher renewable electricity production, reducing both electricity costs and overall system pressure. Within GENDER4POWER, five participating households have already received demand-response equipment, while additional deployments are planned as implementation progresses. Although a future energy-sharing scheme is a possibility, individual balcony systems seem like the easiest path for energy poor households currently.



The design of the demand-response approach builds upon the practical experience developed by CommonEn Energy Community, which has demonstrated that relatively simple demand-response solutions can provide tangible benefits for households while requiring limited behavioural adjustments. Building upon this experience, the Greek demonstrator combines demand-response technologies with personalised guidance and energy literacy activities to ensure that participants understand both the operation of the technologies and the broader principles of energy flexibility.

Beyond immediate energy savings, demand-response also prepares beneficiaries for the future evolution of the Greek electricity market. Dynamic electricity pricing is expected to become increasingly widespread in Greece over the coming years, making flexibility and informed electricity consumption progressively more valuable for households. By familiarising vulnerable households with these technologies today, the project contributes not only to short-term energy savings but also to improving their capacity to benefit from future market developments.

Outlining possible energy-sharing and demand-response schemes with focus on involving vulnerable people

Collective self-consumption through Hyperion Energy Community constitutes the long-term pathway for providing vulnerable households with access to locally produced renewable electricity. By sharing the electricity generated by community-owned photovoltaic installations, beneficiaries can reduce their energy costs without having to invest in individual renewable energy systems. This approach is particularly important for apartment residents and tenants, who are often excluded from conventional rooftop photovoltaic schemes because they do not own their dwelling or cannot make structural modifications to the building. Community energy therefore decouples access to renewable electricity from property ownership, making participation in the energy transition considerably more inclusive.

Demand-response complements energy sharing by enabling households to optimise when and how they consume electricity. Unlike structural renovation measures, demand-response technologies require minimal installation, involve little disruption to everyday life and can be deployed irrespective of housing tenure. They therefore represent an accessible solution for renters, households living in multi-apartment buildings and beneficiaries who are unable or unwilling to undertake extensive renovation works. The approach adopted in the Greek demonstrator builds on the experience of CommonEn Energy Community, adapting its demand-response practices to the needs of Hyperion's members while combining technology deployment with tailored energy advice and energy literacy activities.

Together, these schemes create a flexible pathway through which vulnerable households can progressively engage with community energy. Beneficiaries may initially participate through demand-response or energy-saving actions, before joining collective self-consumption as additional renewable energy capacity becomes available. This staged approach allows support to be tailored to individual



circumstances while ensuring that both homeowners and tenants can benefit from the project. In doing so, the Greek demonstrator demonstrates that meaningful participation in community energy does not depend on property ownership or the ability to undertake major renovations, but on the availability of inclusive mechanisms that enable all citizens to contribute to and benefit from the energy transition.

Assessment of energy-sharing and demand-response schemes with view on demonstrator's needs and focus on engagement of vulnerable women

The implementation of the Greek demonstrator confirms that energy-sharing and demand-response should not be considered competing approaches but complementary elements of a broader community energy strategy. While collective self-consumption provides direct access to renewable energy, demand-response improves the efficiency with which this energy is consumed, increasing the overall value of existing renewable generation.

Initially, the project assumed that the deployment of demand-response technologies would reduce participating households' electricity consumption by approximately **5%**, in line with existing literature and previous pilot experiences. However, preliminary monitoring data collected during implementation indicate that actual reductions may reach **up to 10%** under real-life operating conditions when demand-response technologies are combined with personalised energy advice and increased energy awareness. This finding suggests that behavioural support and energy literacy considerably enhance the effectiveness of technological interventions, reinforcing the integrated approach adopted throughout GENDER4POWER.

Demand-response also proved particularly appropriate for the needs of vulnerable women participating in the project. Unlike extensive renovation works, demand-response devices require minimal disruption to everyday life, involve no structural modifications to the dwelling and can be implemented regardless of housing tenure. This makes them especially suitable for tenants and households experiencing renovation stress or administrative barriers that prevent participation in more extensive interventions.

Similarly, collective self-consumption offers benefits that extend beyond financial savings. Participation in Hyperion's energy-sharing scheme strengthens beneficiaries' connection with the energy community, increases awareness of renewable energy and creates opportunities for continued engagement with other community initiatives. Combined with the participatory activities developed throughout the project, these schemes contribute not only to reducing energy costs but also to strengthening confidence and energy citizenship among participating women.

The assessment therefore indicates that the greatest benefits are achieved when energy-sharing, demand-response, behavioural support and community participation are implemented together rather than as isolated technical measures.



Design energy-sharing and demand-response schemes, tailored to the needs of the demonstrator

Taking into account both the regulatory constraints encountered during implementation and the evolving needs of participating households, the Greek demonstrator has progressively developed a technical strategy centred on maximising the social impact of existing renewable energy resources while preparing for future expansion.

The approach combines four complementary components. First, vulnerable households are progressively integrated into Hyperion's collective self-consumption scheme whenever sufficient renewable generation capacity becomes available. Second, demand-response technologies are deployed to optimise electricity consumption, reduce household expenditure and prepare beneficiaries for future dynamic electricity pricing. Third, household-level energy efficiency interventions, including insulation improvements, replacement of inefficient windows and doors, efficient heating and cooling systems and personalised energy advice, reduce overall electricity demand. Finally, continuous energy literacy activities strengthen beneficiaries' understanding of energy consumption, enabling them to make informed decisions regarding their everyday energy use.

A particularly innovative element of the Greek demonstrator is the development of **citizen-led renovation initiatives** within Hyperion Energy Community. Rather than viewing energy efficiency solely as an individual household intervention, the project encourages community members to collectively reduce electricity demand through renovation, behavioural change and efficient technologies. Lower community-wide electricity consumption effectively "frees" part of the photovoltaic capacity currently allocated to existing members, allowing additional vulnerable households to benefit from collective self-consumption without requiring immediate expansion of renewable generation.

The overall design therefore moves beyond a technology-centred approach towards an integrated community energy model in which renewable generation, energy efficiency, flexibility, citizen participation and energy literacy reinforce one another.

Hyperion currently has a waiting list of 120 people, so preliminary design of an energy sharing scheme includes a 450kWp photovoltaic park with a cost of approximately 300.000€. 5% of that refers to 22,5kWp that can accommodate around 11 vulnerable households. The timeline, though, for its implementation extends to late 2027 - early 2028, because of the long permitting processes.

Lessons learned and reflections on the process

The introduction of the new legislative framework for energy communities significantly affected the original implementation plan, illustrating how rapidly changing policy environments can influence community energy projects. Rather than delaying implementation, the project responded by diversifying its technical interventions and placing greater emphasis on demand-response, energy efficiency and household-level improvements while continuing to pursue its long-term renewable energy objectives.



One of the principal lessons emerging from the demonstrator is the value of combining technologies rather than relying on a single intervention. Collective self-consumption, demand-response, targeted renovation measures, efficient heating and cooling systems, behavioural support and energy literacy proved considerably more effective when implemented together than when considered independently. Equally important, the project demonstrated that relatively modest and affordable interventions, such as replacing inefficient doors, improving insulation or supporting behavioural change, can generate significant reductions in energy consumption when carefully tailored to beneficiaries' needs.

The experience also reinforces the importance of co-designing technical interventions with beneficiaries. Technical solutions achieve their greatest impact when they respond not only to building characteristics but also to people's everyday realities, preferences and capacities. Recognising renovation stress, housing tenure, care responsibilities and financial constraints during technical planning significantly increased the feasibility and acceptance of proposed interventions.

Finally, the Greek demonstrator highlights the growing importance of flexibility within future energy systems. Demand-response technologies not only contributed greater-than-expected energy savings, reaching up to **10%** in some participating households compared with the initially anticipated **5%**, but also prepared beneficiaries for the gradual introduction of dynamic electricity pricing and more flexible electricity markets in Greece. Supporting vulnerable households to engage with these developments today contributes to a more equitable and future-proof energy transition, ensuring that those most at risk of energy poverty are not left behind as electricity systems continue to evolve.

The Greek experience therefore demonstrates that technically feasible solutions are those that remain adaptable, socially inclusive and responsive to changing regulatory conditions. This integrated approach provides a practical model for other energy communities seeking to combine renewable energy, energy efficiency and citizen participation in addressing energy poverty while strengthening long-term community resilience.



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Report on citizen-led strategies developed at GENDER4POWER demonstrator in Amiestas in Vilnius, Lithuania

Deliverable 4.1

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Introduction

This document outlines strategies for reducing energy poverty, drawing on the insights, expertise, and practical experiences gained from the GENDER4POWER pilot areas (including Ambassadors) and project partners. The strategies presented here are the result of a collaborative process between project partners, based on previous conducted analysis (WP2) and implemented participatory activities (WP3). This document details the core pillars of the various strategies, including the tools, stakeholder engagement and analytical frameworks employed throughout the development process.

Pilot context

Atnaujinkime miestą (Amiestas) is the municipal organisation responsible for coordinating and facilitating the renovation of multi-apartment residential buildings in the City of Vilnius. Amiestas acts as an intermediary between residents, homeowners' associations, building administrators, technical experts, contractors, financial institutions, and the municipality, supporting building renovation projects from their initial planning stages through implementation.

As the largest city in Lithuania, Vilnius faces the dual challenge of improving the energy performance of an ageing residential building stock while ensuring that the transition towards climate neutrality is socially inclusive. A significant share of apartment buildings was constructed between the 1960s and the early 1990s using prefabricated concrete technologies. Although many buildings have undergone partial modernization, a considerable proportion still exhibits poor thermal performance, inefficient heating systems, inadequate ventilation, and high energy consumption. These factors contribute to elevated heating costs, reduced indoor comfort, and increased vulnerability to energy poverty.

Energy poverty in Lithuania is closely linked to rising energy prices, relatively low household incomes among certain population groups, and the technical condition of residential buildings. Vulnerability is particularly evident among elderly residents living alone, low-income households, single-parent families, persons with disabilities, and households occupying poorly insulated apartments. While national renovation programmes provide financial support for building modernization, participation often depends on residents' understanding of renovation processes, their trust in institutions, and their willingness to engage collectively in decision-making.

Within this context, Amiestas aims to strengthen the social dimension of building renovation by promoting inclusive participation, improving energy literacy, and developing approaches that enable vulnerable households to actively participate in decisions affecting their homes and neighbourhoods.



Strategy on engagement of citizens and community

This strategy aims at enhancing the participation of vulnerable households in actions to alleviate energy poverty. It helps to introduce inclusive governance models at the neighbourhood and district levels, incorporating participatory decision-making methods to amplify diverse voices. Furthermore, it contributes to boosting energy literacy through user-friendly communication and gender perspectives, fostering trust in various energy solutions, and creating awareness spaces.

Short introduction to inclusive governance models and participatory decision making, with focus on gender perspectives and fostering trust

Inclusive governance models and participatory decision-making are not merely ideals; they are practical approaches to building societies that are equitable, resilient, and trusted by their citizens. By embedding gender perspectives into governance structures, institutions can ensure that proposed solutions reflect the lived realities of all people. Ultimately, fostering trust through inclusion strengthens democracy, enhances legitimacy, and creates pathways for sustainable development.

Inclusive governance refers to frameworks and practices that prioritize representation, equity, and accountability. Unlike traditional top-down models, inclusive governance integrates diverse perspectives into formulation and implementation of solutions. It recognizes that sustainable solutions to social, economic, and environmental challenges require input from all stakeholders, especially those historically excluded from decision-making.

Participatory decision-making is the practical mechanism through which inclusive governance is realized. It involves creating platforms where citizens can contribute ideas, deliberate on policies, and influence outcomes. This can take the form of community consultations, participatory budgeting, or digital platforms that enable broad engagement.

Gender perspectives are central to inclusive governance because women and gender minorities often face systemic barriers to participation. Despite progress, many governance structures remain male-dominated, limiting the scope of perspectives considered in decision-making. Integrating gender perspectives involves not only increasing representation but also reshaping institutional cultures to value inclusivity. Studies show that when women participate in governance, policies are more likely to address issues such as healthcare, education, and social welfare. Co-creation processes should be designed to identify and address gendered impacts of proposed solutions, ensuring equitable outcomes.



Trust is both a prerequisite and an outcome of inclusive governance. When citizens perceive that their voices are valued and their concerns addressed, they are more likely to trust institutions. Conversely, exclusion breeds skepticism and disengagement.

Strategies to foster trust include:

- Transparency in processes: Clear communication about how decisions are made and implemented.
- Feedback mechanisms: Allowing citizens to see how their input influences outcomes.
- Capacity building: Equipping marginalized groups with skills and resources to participate effectively.
- Cultural change: Promoting respect, empathy, and collaboration within institutions.

It is against this backdrop that the GENDER4POWER strategy for engaging the citizens and community is developed.

Defining the purpose and scope of the collaborative process

Purpose of the Collaborative Process

The primary goal of the collaborative process is to ensure that residents, particularly those vulnerable to energy poverty, particularly women-headed households, elderly women living alone, and caregivers, actively participate in the planning and implementation of multi-apartment building renovation projects. The process seeks to strengthen trust between residents, Amiestas, the Vilnius City Municipality, building administrators, and other stakeholders while improving residents' understanding of renovation benefits and encouraging informed decision-making, while ensuring that communication reaches groups at greater risk of energy poverty, including women with caregiving responsibilities, elderly women living alone, and single-parent households.

Rather than treating residents solely as beneficiaries of renovation programmes, the collaborative process positions them as active partners whose experiences, needs, and expectations contribute to shaping renovation projects. Early and continuous engagement will improve the quality of communication, increase acceptance of renovation measures, and reduce social barriers that often delay or prevent renovation projects.

In the Amiestas demonstrator, collective decision-making among apartment co-owners is one of the central challenges affecting renovation uptake. Even where technical solutions and financial support are available, decisions must be agreed within homeowners' or other co-owner governance structures. This means that trust-building, accessible communication, and early engagement are essential not only for informing residents, but also for helping communities reach shared decisions despite differences in income, risk perception, previous renovation experience, and personal priorities.



The intended outcomes of the collaborative process are to:

- increase participation of vulnerable households in renovation planning;
- improve residents' understanding of energy efficiency and renovation processes;
- strengthen cooperation between technical, social, and municipal actors;
- build trust in municipal renovation programmes;
- identify social barriers affecting renovation participation; and
- develop communication and engagement practices that can be replicated in future renovation projects across Vilnius.

Scope of the Collaborative Process

The collaborative process focuses on social and organisational aspects of renovation rather than technical design or financial decision-making.

The process will address the following questions:

- Which households face the greatest barriers to participating in renovation projects?
- How can vulnerable residents be identified and effectively engaged?
- Which communication methods are most accessible for different resident groups?
- How can residents participate meaningfully throughout the renovation process?
- How can cooperation between municipal institutions, building administrators, social services, and residents be strengthened?
- How can trust in renovation programmes be improved?

The collaborative process will not address:

- technical engineering solutions;
- procurement procedures;
- contractor selection;
- financial support schemes; or
- detailed building design decisions.

These topics remain within the responsibilities of the relevant technical and administrative institutions.



Measuring Success

The effectiveness of the collaborative process will be assessed using both quantitative and qualitative indicators. Key indicators include:

- increased participation in community meetings and workshops;
- improved representation of vulnerable households in engagement activities;
- increased participation of women, elderly residents, and socially vulnerable groups;
- improved resident understanding of renovation processes;
- increased trust in Amiestas and municipal renovation programmes;
- strengthened cooperation among municipal institutions and local organisations;
- positive participant feedback regarding communication and engagement activities; and
- incorporation of residents' feedback into project planning.

Progress will be monitored throughout the project and communicated through internal project reporting, stakeholder meetings, and dissemination activities within the GENDER4POWER project.

Analysis of the most suitable participatory decision-making approaches in the context of energy poverty

Residents experiencing energy poverty often face multiple barriers that reduce their ability to participate in renovation processes.

These barriers include:

- limited knowledge of renovation and energy efficiency;
- complex technical terminology;
- lack of trust resulting from previous experiences;
- limited digital literacy;
- time constraints related to work or caregiving responsibilities;
- physical accessibility challenges among elderly or disabled residents;
- language and communication barriers for multicultural communities; and
- social isolation.

To overcome these barriers, the collaborative process will apply the following principles:

- use clear, non-technical language;



- provide printed and digital information in accessible formats;
- organise meetings within neighbourhoods at convenient times;
- offer individual consultations where necessary;
- cooperate with social workers and community organisations to reach vulnerable residents where necessary;
- use trusted local representatives and building leaders as intermediaries;
- provide opportunities for both face-to-face and online participation;
- encourage gradual participation beginning with informal activities before moving towards structured decision-making.

Particular attention will be given to ensuring equal participation of women, elderly residents, and households experiencing social exclusion.

Suitable Participatory Approaches

Considering the characteristics of the Amiestas demonstrator, a combination of participatory approaches is considered most appropriate.

Neighbourhood information meetings provide opportunities for residents to obtain reliable information while discussing renovation with municipal representatives and experts.

Co-design workshops enable residents to identify priorities, discuss concerns, and contribute ideas for improving communication and resident support throughout renovation.

Small-group discussions encourage participation from residents who may feel uncomfortable speaking during larger public meetings.

Individual consultations and home visits provide personalised support for vulnerable households requiring additional guidance.

Community events organised together with neighbourhood organisations help build trust in informal settings before formal renovation decisions are required.

Digital participation tools complement face-to-face activities by allowing working residents to access information and provide feedback remotely.

Combining several participation methods ensures that residents with different needs and preferences have equal opportunities to contribute.

Selecting and reaching out to relevant stakeholders

The collaborative process requires cooperation between organisations responsible for renovation, social support, community development, and citizen engagement.



Stakeholder	Role	Purpose of Engagement
Amiestas	Overall coordination	Lead the collaborative process and coordinate stakeholder cooperation
Vilnius City Municipality	Strategic oversight	Ensure alignment with municipal policies
Building administrators	Daily communication with residents	Support engagement and information sharing
Homeowners' associations	Resident representation	Mobilise participation and communicate resident needs
Social Services Department	Identification of vulnerable households	Ensure inclusive participation
Energy and renovation experts	Technical expertise	Explain renovation solutions in accessible language
Local community leaders	Community mobilisation	Encourage participation and local ownership
Residents	Co-creation	Provide lived experience and participate in decision-making

Objectives of Engagement

Stakeholders will participate through different forms of engagement depending on their responsibilities.

- Municipal institutions: collaboration and strategic coordination.
- Building administrators: information sharing and implementation support.
- Social services: consultation and identification of vulnerable households.
- Technical experts: communication and knowledge transfer.
- Residents: consultation, co-design, and continuous feedback.

Stakeholder input will directly inform communication materials, engagement activities, and improvements to renovation processes.

Communication Structure

Communication will combine several channels:

- direct invitations to homeowners' associations;
- e-mail communication;
- Amiestas communication channels;
- social media;
- printed leaflets and posters;
- neighbourhood notice boards;
- local community events;
- referrals through social workers and community organisations.



Using multiple communication channels will maximise accessibility and ensure that digitally excluded residents are not overlooked.

Planning the engagement events

Activity	Objective	Participants	Timing & Location	Organiser
Stakeholder coordination meeting	Establish the engagement strategy, define stakeholder roles and responsibilities, and agree on the collaborative process for the demonstrator.	Amiestas, Vilnius City Municipality, Social Services Department, building administrators, homeowners' associations.	Amiestas or Vilnius City Municipality offices.	Amiestas
Community information meetings	Present the renovation programme, explain the renovation process and expected benefits, answer residents' questions, and encourage participation.	Residents, homeowners' associations, building administrators, municipal representatives.	Before renovation planning; community centres or building common areas.	Amiestas in cooperation with Vilnius City Municipality
Energy Café	Build trust through informal discussions, improve energy literacy, and collect residents' experiences, concerns and expectations regarding renovation.	Residents, community representatives, Amiestas staff, invited experts.	Throughout the project; community centres, libraries or neighbourhood venues.	Amiestas
Building co-design workshops	Collect residents' feedback, identify priorities and concerns, and jointly develop communication and engagement	Residents, homeowners' associations, building administrators, technical experts.	During renovation planning; community facilities or municipal premises.	Amiestas



	solutions for the renovation process.			
Post-renovation feedback	Evaluate the engagement process, collect residents' experiences and lessons learned, assess satisfaction with the renovation process, and identify recommendations for future projects.	Residents, Amiestas, Vilnius City Municipality, building administrators and other relevant stakeholders.	Following completion of renovation works.	Amiestas

Facilitating the collaborative sessions

Amiestas staff will facilitate the majority of engagement activities, supported where appropriate by municipal representatives, community facilitators, and external experts.

Facilitators will encourage active participation by:

- asking open-ended questions;
- encouraging quieter participants to contribute;
- summarising discussion points;
- using visual examples;
- facilitating consensus-building;
- addressing disagreements respectfully;
- recognising participant contributions.

Expected challenges include limited trust, low participation, technical complexity, and differing resident expectations.

These challenges will be addressed through clear communication, practical examples, experienced facilitation, flexible meeting formats, and continuous feedback.

Documenting outcomes and ensuring follow-up

Each engagement activity will be documented through:

- attendance lists;



- presentations (where necessary)
- photographs (where consent is provided);
- completed questionnaires;
- workshop outputs;
- participant feedback forms.

Following each activity:

- key findings will be summarised;
- participants will receive follow-up information where appropriate;
- agreed actions will be incorporated into future engagement activities;
- outcomes will be reported within the GENDER4POWER project.
- Feedback will remain an ongoing process throughout the demonstrator rather than a one-off exercise.

Guidelines for replications in other contexts

Amiestas demonstrates that successful renovation depends as much on effective citizen engagement as on technical expertise.

Key lessons include:

- early engagement builds trust and reduces resistance to renovation;
- communication should prioritise clarity rather than technical detail;
- cooperation between technical and social actors significantly improves outreach to vulnerable households;
- informal community activities complement formal consultations;
- flexible participation methods increase inclusiveness;
- continuous feedback strengthens institutional learning and improves future projects.

Mechanisms supporting long-term sustainability include:

- strong municipal leadership;
- long-term partnerships with community organisations;
- integration of engagement into standard renovation procedures;
- regular monitoring of participation;
- continuous improvement based on resident feedback.



The most transferable elements of the process are the collaborative governance model, accessible communication methods, stakeholder cooperation, and participatory engagement activities.

- Elements requiring adaptation include stakeholder composition, communication channels, demographic characteristics, local governance arrangements, and community-specific social challenges.



Strategy on addressing social challenges for energy poverty alleviation

Developing this strategy, demonstrators aim to comprehensively address the unique dynamics of communities, creating tailor-made solutions that consider factors such as living conditions, time resources, literacy, access to information, social exclusion, language barriers, and gender perspectives. The strategy will also evaluate methods to avoid renovation interventions leading to gentrification or eviction of vulnerable households. Furthermore, it will yield solutions for alleviating both energy-related and non-energy-related (e.g., building management, split incentives, spatial issues) administrative and regulatory barriers.

Introduction and objectives

The purpose of this strategy is to ensure that Amiestas addresses not only the technical aspects of building renovation but also the underlying social inequalities that influence participation, access to benefits, and long-term affordability of housing. The strategy aims to support inclusive renovation processes that prevent exclusion of vulnerable households, strengthen social cohesion within residential buildings, and reduce risks of indirect displacement or energy poverty rebound effects after renovation.

The key objectives are to:

- identify and understand the main social drivers of energy poverty in the Vilnius multi-apartment housing context;
- ensure meaningful inclusion of vulnerable households in renovation processes;
- reduce inequalities in access to information, decision-making, and benefits from renovation;
- support cooperation between municipal services, building administrators, and social support institutions;
- prevent renovation processes from contributing to social exclusion, affordability loss, or gentrification pressures; and
- develop replicable approaches for socially just renovation processes in Lithuania.

Outline of key social challenges linked to energy poverty

Energy poverty in Vilnius is shaped by a combination of income constraints, housing conditions, institutional complexity, and social factors. The most affected groups include elderly residents living alone, low-income households, single-parent families, persons with disabilities, and residents with limited digital or administrative capacities.



Structural inequalities

Income inequality remains a key determinant of vulnerability, particularly in buildings where renovation decisions require collective agreement but financial capacity varies significantly between households. Even when renovation subsidies are available, the requirement for coordination among co-owners can delay or block participation.

Age is another important factor. Elderly residents often experience higher energy burdens due to inefficient housing conditions and lower adaptive capacity, while simultaneously facing barriers related to digital exclusion and administrative complexity.

Gender dynamics also play a role, as women—particularly those with caregiving responsibilities—may face time constraints and reduced participation in formal decision-making processes within homeowners' associations.

Housing conditions further reinforce vulnerability. Poor insulation, outdated heating systems, and uneven maintenance of apartment blocks contribute to high energy consumption and indoor comfort disparities between households within the same building.

Social consequences

When households are unable to afford adequate energy services, the consequences extend beyond energy costs. Key impacts include:

- increased health risks due to cold indoor temperatures and poor air quality;
- reduced wellbeing and increased stress related to energy affordability;
- social isolation, particularly among elderly residents;
- reduced participation in community and decision-making processes;
- tensions within buildings related to unequal financial capacities.

These effects highlight that energy poverty is not only a technical issue but also a social cohesion and public health challenge.

Community profiling and vulnerability assessment

The Vilnius demonstrator operates within diverse multi-apartment building communities characterised by mixed socio-economic profiles and varying levels of civic engagement.

Key vulnerability factors

The following factors define vulnerability in the Amiestas context:

- household income level and energy expenditure burden;
- age structure, particularly elderly single-person households;



- housing tenure and decision-making power within homeowners' associations;
- level of education and energy literacy;
- digital access and administrative capacity;
- language and communication barriers in some neighbourhoods;
- gender roles and caregiving responsibilities;
- degree of social isolation or community participation.

Indicators of vulnerability

To identify and monitor vulnerability, the following indicators are relevant:

- self-reported difficulty in paying energy bills;
- delayed or reduced heating consumption;
- participation rates in homeowners' association decisions;
- level of engagement in renovation-related meetings;
- need for social assistance or municipal support;
- building-level energy inefficiency indicators;
- reported comfort and wellbeing levels in households.

Social exclusion and participation constraints

Many vulnerable residents face time and resource constraints that limit participation in renovation processes. Working-age households may lack time to attend meetings, while elderly residents may face mobility or communication barriers. In addition, low trust in institutions and limited understanding of renovation processes can lead to passive exclusion even when formal participation opportunities exist.

Tailor-made intervention design

Addressing energy poverty in the Amiestas context requires a combination of technical, social, behavioural, and institutional interventions that operate at different time scales.

Short-term interventions

Short-term measures focus on immediate barriers to participation and understanding:

- targeted information and simplified communication materials;
- individual consultations for vulnerable households;
- support from building administrators and social workers;



- facilitated meetings with translation into accessible language;
- home visits for elderly or immobile residents;
- clarification of renovation steps and expected impacts;
- peer-to-peer support mechanisms within buildings.

Long-term interventions

Long-term measures aim to address structural conditions of vulnerability:

- integration of social support services into renovation planning;
- strengthening of homeowners' associations governance capacity;
- systematic improvement of housing stock through phased renovation programmes;
- development of stable municipal coordination structures for renovation support;
- integration of energy poverty considerations into urban housing policy.

Equity and anti-displacement safeguards

Although large-scale displacement is not typical in Lithuanian renovation processes, indirect exclusion risks exist if renovation costs, administrative burdens, or governance structures disproportionately affect vulnerable households. To mitigate these risks, the following principles should guide intervention design:

- ensure that renovation benefits are accessible to all co-owners regardless of income level;
- provide targeted support for households unable to participate actively in decision-making;
- prevent exclusion through complex administrative procedures;
- maintain affordability of housing after renovation through appropriate support schemes;
- strengthen mediation mechanisms in homeowners' associations to prevent conflict.

Required resources and partnerships

Effective implementation requires coordination among:

- Amiestas as renovation coordinator;
- Vilnius City Municipality for policy alignment;
- social services for vulnerability identification and support;
- homeowners' associations for local governance;
- NGOs for outreach and trust building;



- technical experts for accessible communication of renovation measures.

Addressing administrative and regulatory barriers

Several non-technical barriers influence the inclusion of vulnerable households in renovation processes.

Key barriers

- complex decision-making procedures within homeowners' associations;
- limited capacity of residents to navigate administrative requirements;
- fragmented responsibilities between municipal and building-level actors;
- insufficient integration between social support and renovation programmes;
- time-consuming approval processes for renovation decisions.

These barriers disproportionately affect elderly residents, low-income households, and individuals with limited administrative literacy.

Recommendations

To improve inclusiveness, the following adjustments are recommended:

- introduction of simplified guidance for homeowners' association decision-making;
- stronger role of renovation facilitators or coordinators to support residents;
- improved integration between municipal social services and renovation programmes;
- clearer communication of rights and responsibilities during renovation;
- development of "one-stop" information support for residents;
- standardisation of accessible communication materials for renovation processes.

Monitoring, evaluation, and adaptation

Indicators

Social impact will be monitored using indicators such as:

- participation rates of vulnerable households;
- level of resident satisfaction with renovation communication;
- perceived trust in municipal renovation processes;
- changes in energy affordability perceptions;



- inclusion of resident feedback in renovation decisions;
- improvements in perceived indoor comfort.

Feedback mechanisms

- Feedback will be collected through:
 - post-meeting surveys;
 - informal discussions during Energy Cafés;
 - input from social workers and community organisations;
 - homeowners' association feedback loops;
 - qualitative insights from home visits.
- Importantly, lived experience of residents will be actively integrated into evaluation processes, ensuring that qualitative insights complement quantitative indicators.

Adaptation mechanisms

- The strategy will remain flexible through:
 - iterative adjustment of communication methods;
 - continuous stakeholder coordination;
 - regular reflection meetings between Amiestas and partners;
 - incorporation of resident feedback into ongoing renovation processes

Policy integration and replication

Policy recommendations

- integrate social vulnerability assessment into renovation planning procedures;
- strengthen the role of municipal intermediaries in renovation processes;
- formalise cooperation between renovation agencies and social services;
- promote standardised but flexible participation frameworks for homeowners' associations;
- ensure that renovation policies explicitly address non-technical barriers.

Transferability

- The approach is highly transferable to other Lithuanian municipalities with similar housing stocks. However, adaptation is required in relation to:
 - local governance capacity;
 - composition of homeowner communities;



- availability of social services;
- demographic structure of residents.

Scaling principles

- Successful scaling should be based on:
- early-stage social engagement in renovation planning;
- integration of trust-building activities into standard procedures;
- institutionalised cooperation between technical and social actors;
- continuous monitoring of social outcomes alongside technical performance.

Feasibility of technical solutions at demonstrator level

This analysis will support the design of renovation interventions tailored to demonstrators and the design of energy-sharing projects and demand-response schemes.

In terms of renovation interventions, it will help to utilize digital twins for simulations, conduct feasibility studies, and develop prototypes for multihousing buildings, neighbourhoods, and districts. Furthermore, it will assess a range of low-tech to high-tech interventions, considering small-scale, cost-effective solutions to large-scale designs, as well as provide recommendations for materials and equipment based on each demonstrator's specific requirements, considering socio-economic characteristics, local climate factors, economy revitalization, and job creation.

In terms of energy-sharing projects and demand-response schemes, it will support involvement of women, affected by energy poverty, in existing and new energy-sharing projects or demand-response programs. Demand-response, in conjunction with renovation, is seen as a structural solution to combat energy poverty by reducing consumption, yielding economic benefits, and promoting energy literacy.

Feasibility analysis will allow each demonstrator to dive into these strategies at different proportions depending on their respective needs and will include these co-developed, citizen-led strategies in 6 individual reports.

Renovation intervention feasibility

Technical, financial, and regulatory constraints

From a technical perspective, most residential buildings in Vilnius targeted by renovation programmes are Soviet-era prefabricated apartment blocks with limited insulation, outdated heating systems, and variable levels of previous partial renovation. These conditions often require comprehensive rather than incremental upgrades to achieve significant energy performance improvements.



Financial feasibility is influenced by the collective decision-making model of homeowners' associations, where renovation approval requires agreement among co-owners with heterogeneous income levels. Even when public support schemes are available, disparities in household affordability can delay decision-making or reduce ambition levels of renovation projects.

Regulatory constraints include complex approval procedures within homeowners' associations, procurement rules for public subsidies, and coordination requirements between municipal renovation programmes and national energy efficiency schemes. These processes can slow down implementation and require strong facilitation by Amiestas.

Influence of building conditions, ownership structures, and community capacity

Building typology strongly determines feasible intervention packages. Standardized Soviet-era apartment blocks allow for scalable solutions (e.g. façade insulation, window replacement, roof insulation), while structural variations between buildings may require tailored approaches.

Ownership fragmentation is a key determinant of feasibility. Decision-making depends on collective agreement among apartment owners, making social cohesion and trust essential preconditions for technical implementation.

Community capacity, including the ability of homeowners' associations to organise decisions, understand technical proposals, and engage in long-term planning, directly affects the ambition and speed of renovation projects. Buildings with stronger internal governance structures tend to adopt more comprehensive renovation packages.

Key risks and mitigation measures

Several risks may affect implementation:

- **Cost overruns:** mitigated through standardized renovation packages and pre-assessed technical solutions.
- **Low acceptance or resistance:** mitigated through early engagement, clear communication, and demonstration of benefits.
- **Disruption during construction:** mitigated through phased works planning and resident communication strategies.
- **Coordination failures among co-owners:** mitigated through professional facilitation by Amiestas and support for homeowners' associations.
- **Temporary discomfort during renovation:** mitigated through clear scheduling and resident support mechanisms.



Assessing a diverse range of renovation interventions

Low-tech, medium-tech, and high-tech solutions

Amiestas primarily operates within a medium-tech renovation context, while allowing integration of selected low-tech and high-tech elements depending on building readiness and community capacity.

- **Low-tech interventions:** basic insulation improvements, sealing of windows and doors, radiator balancing, and behavioural energy-saving measures.
- **Medium-tech interventions:** façade insulation systems, roof and basement insulation, window replacement, and heating system upgrades.
- **High-tech interventions:** smart heating controls, digital energy monitoring systems, and integration of renewable energy sources where technically feasible.

Relevant renovation options for Amiestas

The most relevant interventions in the Vilnius context include:

- external wall insulation for prefabricated buildings;
- roof and basement insulation;
- replacement of outdated windows with high-efficiency units;
- modernization of district heating sub-stations;
- installation of individual or building-level heat regulation systems;
- selective integration of rooftop solar PV systems where structural conditions allow;
- introduction of basic smart metering and monitoring tools.

Comparison of interventions

In general:

- **Insulation measures** provide the highest long-term energy savings and are the most cost-effective in terms of energy reduction per investment unit.
- **Heating system upgrades** offer significant comfort improvements and reduce heat losses but require coordination with district heating systems.
- **Smart controls and digital tools** provide lower direct energy savings but have high value for energy literacy and behavioural change.
- **Renewable integration** is context-dependent and limited by structural and ownership constraints but can provide additional long-term sustainability benefits.



Balance between performance and accessibility

The most suitable interventions for Amiestas are those that combine high energy savings with minimal disruption and clear collective benefits. External insulation combined with heating system modernization offers the best balance between technical performance, affordability (through subsidies), and social acceptability.

In practice, renovation interventions may be implemented either as a comprehensive package or in clearly planned phases, depending on building condition, financing, resident approval, procurement timing, and construction feasibility. For the Amiestas demonstrator, the preferred strategic approach is to define a coherent package of measures at building level, while allowing phased implementation where this is necessary to reduce disruption, manage costs, or secure co-owner agreement. Phasing should not weaken the overall ambition of the renovation package; instead, it should ensure that each step contributes to the long-term energy performance, affordability, and comfort objectives of the building.

Assessing materials and equipment use

Materials and affordability

Material selection in Amiestas renovation projects is strongly influenced by national procurement frameworks and EU-aligned energy efficiency standards. Priority is given to materials that:

- meet EU energy efficiency and safety standards;
- are widely available in the regional construction market;
- offer long service life and low maintenance requirements;
- are compatible with standardized renovation systems used in Lithuania.
- Typical materials include mineral wool and polystyrene insulation systems, high-efficiency PVC or wooden windows, and prefabricated façade insulation components.

Durability, maintenance, and environmental impact

- Durability is a key requirement, as renovation investments are expected to deliver benefits over multiple decades. Mineral wool insulation offers high durability and fire resistance, while EPS systems provide cost advantages but may require stricter quality control.
- Environmental considerations increasingly favour materials with lower lifecycle emissions and improved recyclability, although cost considerations remain a dominant factor in procurement decisions.
- Maintenance requirements are generally low for passive building envelope improvements but higher for active systems such as smart controls or renewable energy installations.



Supply chain and safety considerations

- The Lithuanian construction market is generally well-supplied with standard insulation and renovation materials, reducing supply chain risks. However, availability of advanced smart energy systems and integrated digital solutions may vary depending on procurement cycles.
- Safety considerations include fire safety compliance, structural integrity of older buildings, and proper installation standards, which require qualified contractors and supervision.

Design renovation interventions that address the unique challenges faced by the demonstrator

Key barriers to address

Renovation design in Amiestas must address multiple barriers:

- technical complexity of renovation proposals;
- disparities in homeowners' financial capacity;
- low trust in collective decision-making processes;
- limited energy literacy among residents;
- gender and caregiving-related time constraints affecting participation;
- administrative complexity of homeowners' associations.

Adaptation to local context

- Given the dominance of multi-apartment prefabricated housing and district heating systems, renovation strategies must prioritise standardized, scalable interventions that can be adapted building-by-building.
- Climate conditions in Lithuania, characterized by cold winters and moderate summers, make heating efficiency and thermal insulation the primary priorities of renovation design.
- Socio-economic diversity requires flexible communication and participation strategies to ensure that both high-capacity and vulnerable households can engage meaningfully.

Ensuring equitable benefits

To ensure that vulnerable groups benefit equitably from renovation:

- communication must be accessible and non-technical;
- participation opportunities must be flexible in timing and format;
- support must be provided for households with limited decision-making capacity;
- energy savings benefits must be clearly communicated to all residents;



- gender-sensitive engagement should ensure equal voice in decision-making structures.

Recommendations on materials and equipment

Best long-term value solutions

For Amiestas, the most effective long-term solutions combine:

- high-performance façade and roof insulation systems;
- efficient window replacement;
- district heating optimization technologies;
- simple, robust smart metering systems that support energy awareness.
- These solutions provide strong energy savings, durability, and compatibility with existing building typologies.

Procurement, safety, and gender-responsive outcomes

Procurement strategies should prioritise:

- certified materials compliant with EU standards;
- contractors with proven experience in multi-apartment renovation;
- transparency in procurement to build resident trust.
- Gender-responsive outcomes can be supported indirectly through:
- ensuring inclusive participation in decision-making;
- providing accessible communication on renovation benefits;
- supporting households with caregiving responsibilities during renovation disruptions.

Training and capacity needs

Successful implementation requires:

- training for building administrators and homeowners' associations;
- capacity building for Amiestas staff in facilitation and communication;
- technical training for contractors on standardized renovation systems;
- awareness-building for residents on energy efficiency practices and use of new systems.



Energy-sharing and demand-response schemes

Coordination of energy use and renewable integration

Lithuania's legal framework permits forms of renewable energy sharing and collective self-consumption, although the practical applicability of these models depends on building ownership structures, metering arrangements, grid connection conditions, and the level of distributed renewable generation. This context is important because energy-sharing regulations differ across countries, and assumptions that apply in Lithuania may not be directly transferable to other demonstrator contexts.

In the Amiestas context, large-scale energy sharing is limited by building typology and existing district heating dependence. However, building-level and neighbourhood-level coordination of energy use can still support improved efficiency and reduced consumption peaks.

Demand-response strategies can be integrated through:

- optimization of district heating consumption;
- building-level heating regulation systems;
- behavioural incentives for reduced peak demand;
- integration of smart metering where feasible.

Incentives and participation

Effective participation incentives include:

- reduced energy bills through optimized consumption;
- improved thermal comfort;
- simplified feedback on energy use;
- collective savings mechanisms at building level.
- Technologies supporting participation include smart heat meters, building energy monitoring dashboards, and simple user feedback tools.

Data governance

Data from smart systems must be:

- individual at household level where appropriate;
- used transparently for collective building benefit;
- managed in compliance with EU GDPR requirements;
- communicated in accessible formats to residents.



Outlining possible energy-sharing and demand-response schemes with focus on involving vulnerable people

Suitable models

For Amiestas, the most suitable models include:

- building-level collective consumption 122ndividualiz;
- district heating demand management schemes;
- simplified peer comparison feedback systems;
- basic time-of-use awareness programmes.
- Full peer-to-peer energy trading models are currently less relevant due to limited distributed generation penetration in multi-apartment buildings.

Barriers for vulnerable households

Key barriers include:

- limited understanding of digital energy tools;
- lack of control over building-level systems;
- low trust in automated systems;
- limited financial flexibility to respond to demand signals.

Ensuring fairness and trust

Fairness can be ensured through:

- transparent communication of benefits;
- collective rather than individual 122ndividualiz models;
- avoidance of punitive pricing structures;
- inclusion of vulnerable households in governance discussions.

Assessment of energy-sharing and demand-response schemes with view on demonstrator's needs and focus on engagement of vulnerable women

Limited relevance of peer-to-peer electricity sharing in current housing stock

Energy-sharing schemes based on peer-to-peer electricity exchange have limited applicability in Amiestas due to the dominance of multi-apartment buildings connected to district heating systems and the low penetration of distributed rooftop PV installations. The current infrastructure does not yet support 122ndividualize energy production at scale.



Strong suitability of building-level demand-response in district heating systems

Demand-response schemes based on individualization of district heating consumption are highly suitable for Vilnius conditions. Building-level substations, heat allocation systems, and individual energy supply enable coordinated reduction of peak demand and efficiency improvements without requiring major infrastructure transformation.

Compatibility with collective governance structures in apartment buildings

Both energy-sharing and demand-response schemes must operate through homeowners' associations and building administrators. This aligns well with existing governance structures but requires facilitation to overcome fragmented decision-making and varying levels of resident engagement.

High relevance of collective behavioural individualization over individual energy trading

Given the social structure of multi-apartment buildings, collective individualization approaches are more feasible and socially acceptable than individualized energy trading systems, which risk excluding less digitally active or less empowered residents.

Needs and Constraints Affecting Participation of Vulnerable Women

Time poverty and caregiving responsibilities limit participation

Vulnerable women, particularly single mothers and caregivers, often face limited time availability, reducing participation in meetings, training sessions, or energy management activities.

Lower digital access and confidence in energy technologies

Digital demand-response tools and smart energy platforms may be less accessible to older women and those with limited digital literacy, creating barriers to engagement in more technology-driven schemes.

Unequal participation in household energy decision-making

In some households, energy-related decisions are still primarily managed by other family members, limiting women's direct influence on participation in energy-sharing or demand-response programmes.

Financial vulnerability and risk aversion

Households led by vulnerable women may be less able to engage in schemes requiring financial flexibility or exposure to variable energy pricing mechanisms.



Information barriers and complexity of communication

Technical language and complex energy system explanations reduce accessibility for vulnerable women unless communication is simplified and delivered through trusted intermediaries.

Schemes with Highest Potential for Empowerment, Cost Savings and Long-Term Engagement

Building-level demand-response in district heating systems (highest relevance)

This scheme is the most suitable for Amiestas as it:

- fully aligns with existing district heating infrastructure;
- requires no individual investment or complex digital participation;
- enables collective energy optimisation at building level;
- ensures equal participation opportunities regardless of income or digital literacy.

It offers strong cost-saving potential and is highly inclusive for vulnerable women due to its collective and low-barrier nature.

Collective behavioural feedback and energy awareness schemes

These schemes include simplified energy consumption feedback, monthly building-level consumption reports, and visualised energy use comparisons.

They:

- support gradual behaviour change;
- increase energy literacy across all resident groups;
- require minimal technical infrastructure;
- are accessible through both digital and offline formats.

They are particularly effective for empowering vulnerable women through knowledge-building rather than financial participation.

Cooperative building-level energy management schemes (medium-term potential)

These schemes involve structured participation of homeowners' associations in monitoring and discussing energy use patterns.

They:

- strengthen local governance capacity;
- increase transparency of energy consumption;



- support long-term behavioural engagement.

However, they require facilitation and inclusive design to ensure women and vulnerable groups are equally represented in decision-making processes.

Limited suitability of peer-to-peer and market-based energy trading schemes

More advanced peer-to-peer electricity trading or market-based demand-response platforms are currently not suitable due to:

- limited distributed renewable generation in apartment buildings;
- high digital and organisational complexity;
- risk of excluding vulnerable households and digitally less active women.

Design energy-sharing and demand-response schemes, tailored to the needs of the demonstrator

Energy-sharing and demand-response approaches in Amiestas should focus on:

- reducing total building energy consumption;
- improving awareness of energy use patterns;
- strengthening collective responsibility among residents;
- supporting gradual behavioural change.

Governance model

The most suitable governance model is a **building-level cooperative decision framework**, where homeowners' associations, supported by Amiestas, oversee energy management decisions in collaboration with technical experts.

This ensures:

- transparency in decision-making;
- shared accountability;
- alignment between technical and social objectives.

Lessons learned and reflections on the process

The feasibility analysis highlights that in Amiestas technical solutions alone are insufficient to ensure successful renovation outcomes. The main determinant of feasibility is the interaction between technical performance, collective governance capacity, and social inclusion.

Key lessons

- Standardized renovation packages increase scalability and reduce risks.



- Trust and communication are as important as technical design.
- Building-level governance capacity strongly influences feasibility.
- Low-tech and medium-tech solutions currently provide the most reliable balance of cost, performance, and accessibility.
- Digital and smart solutions have high potential but require gradual introduction.

What worked well

- Integrated approach combining technical and social perspectives;
- Focus on standardized renovation solutions adapted to building typologies;
- Early involvement of stakeholders in defining renovation priorities.

Challenges

- Fragmentation of decision-making among homeowners;
- Limited energy literacy among residents;
- Varying financial capacities within the same building;
- Complexity of aligning technical and social objectives.

Future improvements

- stronger integration of digital tools for resident communication;
- expanded use of building-level energy monitoring systems;
- deeper integration of social services into renovation planning;
- more structured support for homeowners' associations in decision-making processes.

Gender and vulnerability considerations

Engagement with vulnerable groups, particularly women and elderly residents, highlighted the importance of:

- flexible participation formats;
- simplified communication tools;
- trusted intermediaries;
- recognition of time and caregiving constraints.

These insights should be further integrated into future iterations of renovation programmes to ensure equitable participation and benefits.



Report on citizen-led strategies developed at GENDER4POWER demonstrator in Hrastnik, Slovenia

Deliverable 4.1

August 2026

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Introduction

This document outlines strategies for reducing energy poverty, drawing on the insights, expertise, and practical experiences gained from the GENDER4POWER pilot areas (including Ambassadors) and project partners. The strategies presented here are the result of a collaborative process between project partners, based on previous conducted analysis (WP2) and implemented participatory activities (WP3). This document details the core pillars of the various strategies, including the tools, stakeholders' engagements and analytical frameworks employed throughout the development process.

Pilot context

In 2024, Slovenia continued to face significant levels of energy poverty, with approximately 7.3% of households (around 63,000) and 4.9% of individuals (about 110,000) affected. Within this broader landscape, the GENDER4POWER pilot in Slovenia is located in the Zasavje region, a historically industrial area in central Slovenia. Covering 485 km² and home to about 57,000 inhabitants across four municipalities (Hrastnik, Litija, Trbovlje, and Zagorje ob Savi), Zasavje has a legacy rooted in coal mining and glass production. Today, it has the lowest GDP per capita in Slovenia (46% below the national average) and high levels of material deprivation (4.5%), making it a key region for testing inclusive renovation approaches.

Characteristic of the area is that heating is often based on wood fuel, which contributes to increased levels of indoor and outdoor air pollution. In some cases, waste burning may also occur. Larger single or multi-family houses, where only 1 or 2 people live, have problems with adequate heating in winter due to high costs and energy inefficient buildings. However, the issue of energy poverty in Hrastnik is not fully elaborated and well defined due to a lack of data at the local level.

In 2023, an energy cooperative was started by FOCUS in cooperation with the Municipality of Hrastnik. This cooperative already implemented one energy community, and another energy community is close to being finalised. There is certainly support from the municipality and the energy community to be established under the Gender4Power project can be carried out under the auspices of the established cooperative.

Aims of the demonstrator: to engage vulnerable groups into energy communities to enhance self-consumption, energy efficiency in savings in the household and develop programmes and strategies for the specific groups.

Focus areas: Health challenges, data collection, barriers to participation in energy communities, and health improvement.

Expected outcomes: An established and operating energy community involving at least 10-15 families affected by energy poverty in decision making, co-design and implementation of technical solutions and skills development, through household visits to ensure energy saving measures in the household (e.g. energy



audit with free package of small energy saving devices) and skills development in energy literacy and energy poverty solutions. In addition, this demonstrator will provide insights into the development of engagement and financial mechanisms for energy communities to implement activities that address energy poverty.

Economic viability: Since at the moment there are no ensured funds for the activities of the existing energy cooperative, the demonstrator will explore how financial mechanisms such as national funds (that would be made available in the near future) can be operationalised in practice. Namely, Slovenia has adopted an action plan on energy poverty, where 5 million EUR are reserved for involving people, affected by energy poverty, in energy Communities. This commitment was transferred into the Social Climate Plan, which is being adopted now. The budget was increased to 9 million EUR.

Actions: production and distribution of renewable energy through an energy community.

Main challenge to address: financial and social constraints to participation of vulnerable households in energy communities.

Vulnerable groups targeted: residents of rural areas.

Scope of activities: municipal level (mainly rural areas)

The demonstrator will be led by FOCUS in collaboration with regional and local authorities (including the Municipality of Hrastnik, the Housing fund of Hrastnik, the Centre for Social Work and the Regional Development Agency Zasavje).



Strategy on engagement of citizens and community

This strategy aims at enhancing the participation of vulnerable households in actions to alleviate energy poverty. It helps to introduce inclusive governance models at the neighbourhood and district levels, incorporating participatory decision-making methods to amplify diverse voices. Furthermore, it contributes to boosting energy literacy through user-friendly communication and gender perspectives, fostering trust in various energy solutions, and creating awareness spaces.

Short introduction to inclusive governance models and participatory decision making, with focus on gender perspectives and fostering trust

Inclusive governance models and participatory decision making are not merely ideals; they are practical approaches to building communities that are equitable, resilient, and trusted by their citizens. By embedding gender perspectives into governance structures, institutions can ensure that proposed solutions reflect the lived realities of all people. Ultimately, fostering trust through inclusion strengthens democracy, enhances legitimacy, and creates pathways for sustainable development.

Inclusive governance refers to frameworks and practices that prioritize representation, equity, and accountability. Unlike traditional top-down models, inclusive governance integrates diverse perspectives into formulation and implementation of solutions. It recognizes that sustainable solutions to social, economic, and environmental challenges require input from all stakeholders, especially those historically excluded from decision-making.

Participatory decision making is the practical mechanism through which inclusive governance is realized. It involves creating platforms where citizens can contribute ideas, deliberate on policies, and influence outcomes. This can take the form of community consultations, workshops, social events or any other format that enables broad engagement.

Gender perspectives are central to inclusive governance because women and gender minorities often face systemic barriers to participation. Despite progress, many governance structures remain male-dominated, limiting the scope of perspectives considered in decision-making. Integrating gender perspectives involves not only increasing representation but also reshaping institutional cultures to value inclusivity. Studies show that when women participate in governance, policies are more likely to address issues such as healthcare, education, and social welfare. Co-creation processes should be designed to identify and address gendered impacts of proposed solutions, ensuring equitable outcomes.

Trust is both a prerequisite and an outcome of inclusive governance. When citizens perceive that their voices are valued and their concerns addressed, they are more likely to trust institutions. Conversely, exclusion breeds scepticism and disengagement.



Strategies to foster trust include:

- Transparency in processes: Clear communication about how decisions are made and implemented.
- Feedback mechanisms: Allowing citizens to see how their input influences outcomes.
- Capacity building: Equipping marginalized groups with skills and resources to participate effectively.
- Cultural change: Promoting respect, empathy, and collaboration within institutions.

It is against this backdrop that the GENDER4POWER strategy for engaging the citizens and community is developed.

Defining the purpose and scope of the collaborative process

The **primary goal** of this collaborative process is to explore and develop ways for vulnerable households to be actively involved in an energy community in a participatory manner and on equal terms with non-vulnerable households. This involves ensuring that collaboration addresses barriers to inclusion and promotes equity among participants.

The **intended outcome** is that by the end of the process, at least ten vulnerable households will be successfully integrated into an energy community on an equal footing with other members. This outcome reflects a commitment to inclusivity, empowerment, and fair access to the benefits of energy communities, ensuring that collaboration leads to tangible, equitable results.

The scope of the collaboration process is to answer the following questions together with the relevant stakeholders and vulnerable households:

- Who are the vulnerable households?
- How to reach them?
- How to involve vulnerable households on an equal footing?
- What are their rights and responsibilities in an energy community?
- How can their long-term participation in an energy community be supported financially?

At the start of the process, six key **criteria to assess the effectiveness** of the participatory process for involving vulnerable households in an energy community are set:

Inclusiveness and accessibility: the process enables meaningful participation of vulnerable households by addressing barriers such as affordability, language, digital access, childcare and time constraints.



Active and equitable participation: the vulnerable households are not only present but actively engaged in decision-making on equal terms with other members and other stakeholders.

Trust and social cohesion: the process fosters trust among participants and builds strong relationships between vulnerable and non-vulnerable households, as well as with other stakeholders in the process, such as the social actors.

Empowerment: vulnerable participants gain knowledge, confidence, and skills to engage in energy-related decisions and maintain long-term involvement in the community, even if/when their vulnerable status changes.

Gender inclusivity and equity: the process ensures meaningful participation of women and gender minorities, which includes not only balanced representation but also creating a safe and inclusive environment.

Involvement in the energy community: successful inclusion of vulnerable households in the energy community and shared access to its benefits.

Comparative analysis of the most suitable participatory decision-making in the context of energy poverty

The vulnerable households in the demonstrator in Slovenia are facing the following most important barriers to participation in an energy community (based on [GENDER4POWER assessment](#)):

Administrative and policy barriers: Slovenia's current legal framework for energy communities requires further improvement to promote inclusivity and alleviate energy poverty. Bureaucratic complexity and limited access to information also prevent vulnerable households from benefiting from energy communities.

Economic barriers: Most energy communities rely on upfront capital contributions, excluding low-income households by design. There are no grant or subsidy options specifically targeting participation of vulnerable people in energy communities. In addition, net metering model which previously allowed the sale of excess self-produced electricity to the grid under favourable conditions has recently been abolished in Slovenia, undermining the economic viability of energy communities. As a result, new business models need to be developed under the frame of the net billing model.

Cultural and social barriers: Energy poverty is often stigmatized, creating feelings of shame that discourage people from seeking support.

Gender-specific barriers: Elderly women living alone are among the most affected by energy-poverty, yet they are rarely engaged. Gender roles and time constraints, particularly for women in caregiving roles limit participation in community energy activities. Childcare, transportation, and digital access are rarely considered in participation design.

Time constraints: Not only women in roles of care taking, but also generally households also facing economic or social stress tend to lack time to engage in meetings or decision-making processes.



Lack of technical knowledge: Often the vulnerable households have a limited understanding of energy systems and technologies, which discourages involvement. Energy trainings are often male-dominated, technical, and exclusionary in tone and format.

Limited access to information: Barriers such as digital exclusion, language differences, or low literacy can restrict access to relevant information.

To overcome these barriers, the following principles and measures should be integrated in the design of the collaborative process:

- **Simple explanations and provided guidance:** Provide clear, user-friendly guidance (including visual and plain-language materials) explaining participation steps. Deliver practical, non-technical training tailored to different literacy levels.
- **Use inclusive formats** (peer learning, storytelling, visual tools) instead of technical lectures. Offer support to assist with paperwork and procedures.
- **Ensured financial support:** Demonstrator should fully eliminate or significantly reduce upfront costs through available subsidies and solidarity mechanisms. For more information about this, see section Strategy on financial schemes.
- **Create inclusive and stigma-free engagement space:** Use trusted local intermediaries (e.g., social workers, social NGOs) to reach vulnerable groups. Frame participation around empowerment and community benefit rather than “energy poverty.” Foster safe, respectful environments that normalize participation.
- **Involvement of GENDER4POWER ambassadors:** Involve both ambassadors in the engagement of the local community and vulnerable households.
- **Gender-sensitive design:** Schedule meetings at flexible times and provide childcare. Actively reach out to underrepresented groups (e.g., elderly women living alone). Ensure facilitation methods that encourage balanced participation and value diverse perspectives.
- **Reduce time burdens:** Offer multiple engagement formats (short sessions, online/offline options, asynchronous input).
- **Improve information accessibility:** Use multiple communication channels (in-person, phone, print, community networks). Provide materials in relevant languages and easy-to-understand formats. Ensure outreach goes beyond digital platforms.
- **Focus on everyday benefits:** Frame participation around greater comfort, lower costs, mutual support, and community well-being rather than technical concepts or energy systems.
- **Start small and build confidence:** Encourage people to take simple first steps, demonstrate early benefits, and create opportunities for gradual involvement. Small successes help build trust, confidence, and long-term engagement.

In order to ensure the best outcomes, the collaborative process is designed in two key phases:

- **Preparatory collaborative work** with social actors and relevant stakeholders and



- Participative and collaborative events with the vulnerable households.

In the first phase, events/meetings will be organised with several key stakeholders, which will help to identify the vulnerable households and set up a plan to reach them. This has partially been addressed by some of the meetings reported in D2.6 (meetings with the municipality and with the social actors in Hrastnik). However, in the next round of meetings with the key stakeholders we will try to specify the vulnerability criteria and outreach channels more in detail.

In the second phase, the process will focus on working with the vulnerable households. Community events are planned to be organised in Hrastnik to engage residents and raise awareness about plans for the future energy community, with a particular focus on informing and involving vulnerable households. A series of participatory events with vulnerable households, such as a joint dinner, an energy walk and a community design workshop - will create opportunities for dialogue and trust-building.

The division into two phases is important because we need to engage the key stakeholders as well as the households, yet with the key stakeholders we need to have a different content for discussion than with the households. Also, as households face the barriers, described above, the events and meetings designed for them are significantly different from the events and meetings designed for the other stakeholders.

Selecting and reaching out to relevant stakeholders

The most relevant stakeholders and key actors for the collaborative process are outlined here:

Institution	Roles and responsibilities	Objective of engaging them
Ministry of environment, climate and energy	Responsible for addressing energy poverty	Collaborate in shaping the community in order to have experience to be used for defining regulatory framework for energy poverty and energy communities
Ministry of environment, climate and energy	Responsible for energy communities and renewables	Collaborate in shaping the community in order to have experience to be used for defining regulatory framework for energy poverty and energy communities
Institute for Innovation and Development of University of Ljubljana	GENDER4POWER ambassador	Collaborate in shaping the community to link the local and national actors, as well as to promote the community
Energy cooperative Zeleni Hrastnik	Coordinator of the cooperative	Collaborate in shaping the community to link it with the activities of the existing community
Centre for social work Hrastnik	Responsible for social issues in Hrastnik	Collaborate in shaping the community to ensure addressing the needs of vulnerable people, also to help identify and engage them



Local action group (LAG) Zasavje	Responsible for LAG activities	Collaborate in shaping the community to explore ways of supporting the community through LEADER program
Municipality of Hrastnik	Mayor of Hrastnik	Collaborate in shaping the community to integrate the community in the strategy of the municipality
Municipality of Hrastnik	GENDER4POWER ambassador	Collaborate in shaping the community to coordinate and mobilise the municipality and other local actors
Red cross Hrastnik	Responsible for Red cross activities	Collaborate in shaping the community to ensure addressing the needs of vulnerable people, also to help identify and engage them
Pensioners' association	Responsible for activities of the pensioners	Collaborate in shaping the community to help identify the vulnerable participants and engage them
Patronage nurses	Responsible for the patronage nurses	Collaborate in shaping the community to help identify the vulnerable participants and engage them

Structuring the activities and planning the engagement events

The following activities will take place in the collaborative process:

Event	Objective of the event	Who to invite and how?	When and where?	Who organises?
Phase 1				
Meeting with the municipality	Decision on location of community powerplant	Mayor, coworkers, direct invitation by mail	24.4.2026, online	Focus
Meeting with the social actors	Discussing how to engage vulnerable households	All social actors, direct invitation by mail	12.3.2026, Hrastnik	Municipality
Meeting with the local action group Zasavje	Discussing the support of the community through the LEADER program	LAG employees, direct invitation by mail	June 2026	Focus
Meeting with the pensioners association	Discussing how to engage vulnerable households	Head of the association, direct invitation by mail	June 2026	Focus



Participative event with the social actors	Co-design the events with households, collaborate in community design	Social actors, direct email invitation and follow-up phone call	10 – 20 July 2026	Focus, municipality
Phase 2				
Participating in the events for local communities of Hrastnik	Inform vulnerable households about energy community plans	Vulnerable households, through placards	21.4.2026: - 14:00 KS Turje Gore - 16:30 KS Kovk 22.4.2026 - 14:00 KS Marno - 16:30 KS Dol 23.4.2026 - 14:00 KS Podkraj - 16:30 KS Steklarna 4.5.2026 - 14:00 KS Krnice - Šavna peč - 16:30 KS Rudnik	Co-organised by the Municipality of Hrastnik and Centre for Social work Hrastnik
Participative event with vulnerable households – joint lunch	Discussions on energy use and bills, design of the community	Vulnerable households, invitation through the social actors	2 September 2026	Focus, social actors
Participative event with vulnerable households – energy walk	Discussions on energy use and bills, design of the community	Vulnerable households, invitation through the social actors	Second part of October 2026	Focus, social actors
Participative event with vulnerable households – community design workshop	Workshop on how the community should work to serve the needs of members	Vulnerable households, invitation through the social actors	Late November 2026	Focus, social actors

Organizing the necessary materials and tools and planning the facilitation



Event	Needed materials and tools	Facilitation	Techniques	Challenges
Phase 1				
Meeting with the municipality	Computer with internet connection	Focus; structured agenda, moderated discussion	Open questions, summarizing decisions, consensus-building	Political sensitivity → keep neutral, focus on shared goals
Meeting with the social actors	Venue, coffee and cookies	Municipality; guided discussion	Round of inputs, active listening, feedback loops	Diverse interests → balance voices, clarify common ground
Meeting with the local action group Zasavje	Computer with internet connection	Focus; dialogue	Idea mapping, targeted questions	Alignment with LEADER program → link to local strategies
Meeting with the pensioners association	Venue	Focus; dialogue	Targeted questions	Low technical confidence → adapt pace, provide examples
Participative event with the social actors	Venue, worksheets, sticky notes, pens, markers, flip charts, coffee and cookies	Focus; structured workshop	Guided discussion, brainstorming, summarizing	Low technical confidence → adapt pace, provide examples
Phase 2				
Participating in the events for local communities	Venue, leaflet for community	Municipality; informal engagement	Questions and prompts, feedback collection	Low technical confidence → keep messages simple, illustrate with examples from non-technical fields (e.g. compare EC to community gardening)
Participative event with vulnerable	Venue, food, drinks,	Focus; informal, trust-building	Open conversation,	Low trust → create safe, relaxed



households – joint dinner	questionnaires, pens		empathy, storytelling	environment, involve social actors whom they trust
Participative event with vulnerable households – energy walk	Map of the walk, camera with thermal vision, questionnaire, pens	Focus, energy expert + facilitator; guided practical session	Demonstration, questions, hands-on learning, questionnaire	Technical complexity → simplify and show real-life examples
Participative event with vulnerable households – community design workshop	Venue, worksheets, sticky notes, pens, markers, flip charts, coffee and cookies, computer, projector, presentation	Focus, main facilitator + support team; interactive co-creation	Visual tools, group discussions, feedback rounds	Participation barriers → use simple tools, encourage all voices

Documenting outcomes and ensuring follow-up

Documenting plan for the meeting with the municipality

Activity	Responsible
Note-taking	Focus
Making of minutes	Focus
Sending minutes to participants	Focus

Documenting plan for the meeting with the social actors

Activity	Responsible
List of participants	Municipality
Note-taking	Municipality
Making of minutes	Municipality
Sending minutes to participants	Municipality



Documenting plan for the meeting with the local action group Zasavje

Activity	Responsible
Note-taking	Focus
Making of minutes	Focus
Sending minutes to participants	Focus

Documenting plan for the meeting with the pensioners association

Activity	Responsible
Note-taking	Focus
Making of minutes	Focus
Sending minutes to participants	Focus

Documenting plan for the participating in the events for local communities

Activity	Responsible
List of participants	Municipality
Collecting feedback from participants	Focus

Documenting plan for the participative event with the social actors

Activity	Responsible
List of participants	Focus
Note-taking	Focus
Making of minutes	Focus
Sending minutes to participants	Focus
Collecting feedback from participants	Focus
Incorporating feedback of participants into minutes	Focus



Documenting plan for the participative event with vulnerable households – joint dinner

Activity	Responsible
List of participants	Focus
Note-taking	Focus
Photos	Focus
Making of minutes	Focus
Collecting leaflets for interest	Focus

Documenting plan for the participative event with vulnerable households – energy walk

Activity	Responsible
List of participants	Focus
Note-taking	Focus
Photos	Focus
Making of minutes	Focus
Collecting leaflets for interest	Focus

Documenting plan for the participative event with vulnerable households – community design workshop

Activity	Responsible
List of participants	Focus
Note-taking	Focus
Photos	Focus
Collecting flipcharts/sticky notes	Focus
Making of minutes	Focus
Collecting leaflets for interest	Focus

Guidelines for replications in other contexts

Key lessons learned from GENDER4POWER collaboration process are:

- Trust-building is essential for engaging vulnerable households—informal engagement (e.g. dinners, local events) increases participation of vulnerable groups



- Clear, simple communication improves inclusion, especially for non-expert stakeholders
- Multi-stakeholder involvement (municipality, NGOs, citizens) strengthens legitimacy and impact
- Practical, hands-on activities (e.g. energy walks) improve understanding and engagement
- Continuous feedback loops ensure participants feel heard and maintain motivation

Mechanisms to ensure sustainability and trust that can be replicated in other environments are:

- Inclusion of local actors and trusted intermediaries, such as social actors
- Informal engagement events
- Create inclusive and safe space and reduce inclusive format
- Reduce time and care burden

Replicable elements:

- Participatory approach and co-creation methods
- Mixed formal/informal engagement formats
- Use of local facilitators and trusted actors
- Practical, experience-based activities

Elements to adapt:

- Stakeholders mix and power dynamics
- Socio-economic context of vulnerable groups
- Institutional frameworks and local governance conditions



Strategy on financial schemes

Developing this strategy, demonstrators will identify financing tools for projects, emphasizing the use of available resources and exploring solutions from private contributions and public financing programs at different levels.

Brief overview of the strategy's purpose

The aim of the strategy is to design a process for identifying funding mechanisms which will support the participation of vulnerable households in energy communities with access to renewable energy and energy efficiency solutions. The strategy should cover inclusive access to finance, removing or reducing barriers to accessing financial and administrative support and creating long-term sustainability through developing social and gender sensitive community led initiatives.

Challenges faced by demonstrators in accessing finance

The Hrastnik demonstrator faces a combination of financial, administrative, institutional, and social barriers when accessing financing for energy community development. From a financial perspective, many households affected by energy poverty have low incomes and very limited savings, which significantly constrains their ability to participate in co-financing schemes or to access credit. As a result, the most vulnerable groups are often excluded from financing mechanisms that require upfront payments. Currently, entry into energy communities in Slovenia is only possible through mechanisms requiring upfront payment, which constitutes a significant barrier for many households. By contrast, Slovenia's renovation support scheme is well developed and covers 100% of renovation costs for vulnerable households. A similar zero-upfront-cost scheme for energy communities is planned under the forthcoming Social Climate Plan.

In addition, administrative procedures linked to funding applications are often complex and difficult to navigate. These challenges are further reinforced by the increasing reliance on digital submission systems, which can create additional barriers for elderly residents or individuals with limited digital skills. Even when funding opportunities exist, the administrative burden can discourage participation or make access dependent on external support. In the field of renovation, Slovenia has established a good administrative support system for accessing subsidies for vulnerable households, whereby local 'coordinators' assist the households in the application phase, as well as in the later phases of the renovation. Such support should be extended also for energy communities when support is available.

Institutional constraints also play an important role. The availability of dedicated public funding remains limited, and approval processes for financial support can be slow and administratively demanding. At the same time, legal and governance requirements related to energy cooperatives can add further complexity, particularly for small or emerging community initiatives that lack administrative capacity or professional support structures.



Furthermore, the recent transition from annual net metering to the new net billing system in Slovenia has weakened the economic viability of new energy communities. The lower compensation tariffs for surplus electricity fed into the grid, compared to the higher prices paid for electricity drawn from the grid, create uncertainty regarding the long-term financial balance of such initiatives, as achieving self-consumption within 15-minute intervals is difficult.

The net billing scheme makes it difficult to reliably estimate how much cheaper energy from renewable sources will be compared with existing contracts for the households. Energy communities are complex projects to set up, and more accurate estimates of energy prices are only possible once the potential of renewable energy sources has been analysed and the size and structure of the community that will share the costs has been determined. Furthermore, current inflation and rapidly changing investment costs make it even more difficult to produce reliable estimates of initial costs and final savings. Due to the uncertainty surrounding costs, which are not yet definitively determined at the start of the project, it is difficult to attract vulnerable groups to participate in such a process.

Finally, social and gender-related factors further shape access to financing. Elderly women living alone are more likely to face combined barriers, including limited time resources, caregiving responsibilities, and lower levels of financial literacy or confidence in dealing with complex administrative and financial procedures. These constraints can reduce their ability to actively participate in energy community initiatives, even when formal access to funding is available.

Financial landscape analysis

Creating sustainable, inclusive and community-based energy communities requires both appropriate technical solutions as well as a tailored financial model. Oftentimes, energy communities have high upfront capital investment requirements, on-going operating expense requirements, and the issue of getting low-income households involved without either increasing their financial burden or creating social stigma.

This chapter reviews the present state of the finance sector for energy community development in Slovenia. It examines publicly funded initiatives for supporting the development of energy communities, privately funded alternatives for financing energy communities and hybrid models that use some combination of public and/or private funds. By providing a map of what is currently available in terms of finance, actors and organizations, this chapter will provide support for developing strategies to promote participation across all income levels in a manner which supports long term sustainability.

Several financing instruments and actors are relevant in the Slovenian context:

Public (national, regional and EU) funding programs:

In the National Action plan for Energy Poverty, there is a fund of 5 million EUR reserved for supporting the involvement of people, affected by energy poverty, in



energy communities. This fund and the idea of the involvement of vulnerable households in energy communities forms the basis for the demonstrator's actions, as it can act as a pioneer for the implementation of this measure of the action plan. The Fund has yet to be operationalized; at the moment the mechanism was transferred to the upcoming Social Climate Fund, where 9 million EUR is reserved for supporting the vulnerable households to access energy communities.

National renewable energy investment subsidies (e.g. public call JP-OVE-05⁴) are direct grants for solar PV installations and battery storage systems. The current scheme supports investments in self-consumption installations of up to 1 MW, with available funding of approximately €30 million and co-financing rates up to 45% of eligible costs. It also explicitly includes community solar projects, making it particularly relevant for energy communities.

Eco Fund loans for demonstration projects provide energy communities or municipalities with low-interest financing to cover upfront costs⁵ of renewable energy installations such as solar PV systems, small wind turbines, or battery storage. The scheme allows the loan to be repaid by project revenues or other public funding, meaning vulnerable households can participate without taking on personal debt. This makes Eco Fund loans a central tool in blended financing models, combining public grants and community contributions to lower financial barriers for inclusive energy projects.

The LEADER program (EU rural development funding, implemented via local action groups) provides grants for innovative local projects, including renewable energy and energy efficiency initiatives, with a focus on community-led solutions. Funding can partially cover project costs, support vulnerable households' participation, and foster cooperation between local stakeholders, making it an important tool for rural energy communities like those in Zasavje.

An additional EU-level financing and support opportunity relevant for energy communities is the European Energy Communities Facility, an initiative funded under the EU's LIFE programme that aims to strengthen access to finance and capacity building for community energy projects across Europe. Through structured calls for proposals, the Facility provides lump-sum grants (e.g., €45,000) specifically to help emerging and existing energy communities develop robust business plans, improving their viability and ability to attract investment.

Private financing opportunities

Private contributions from energy community members can be structured to allow households to co-invest in renewable energy installations, such as rooftop solar or shared battery storage, without creating financial strain. Contributions can take the form of small, flexible payments proportional to each household's capacity or income, or through phased instalments aligned with savings. In blended financing models, these contributions can be combined with public grants and loans,

⁴ <https://borzen.si/sl-si/podpore-za-zelene-investicije/subvencije-za-proizvodnjo-elektrike-iz-soncne-energije-in-hranilnike-jp-ove-05>

⁵ <https://www.ekosklad.si/gospodarstvo/orodja/hitri-informativni-izracun-kredita>



ensuring that vulnerable households can participate without stigma or undue financial risk.

This model has already been tested in practice: the Zeleni Hrastnik energy cooperative has financed its installations to date through member contributions of €100/kW for natural persons and €1,000/kW for legal entities, demonstrating the viability of private co-investment at community scale. However, this entry threshold will need to be lowered or tiered for vulnerable households to ensure genuinely inclusive participation.

Crowdfunding and peer-to-peer financing platforms enable energy communities to mobilize small contributions from civil society, local businesses, and individual donors. Contributions can be structured as donations, interest-bearing loans, or pre-purchases of energy produced by the community, creating flexible participation models. This approach has not yet been used in the development of energy communities in Slovenia.

Energy cooperatives can issue membership shares, giving contributors both financial participation and governance rights in the community energy project. Share structures can be scaled according to members' financial capacity, ensuring that low-income households can join with minimal financial burden. This model has not yet been used in the development of energy communities in Slovenia.

Blended financing combines public funds, private contributions, and other financing instruments to reduce the upfront costs for energy communities, particularly for vulnerable households. A common approach is to pair public grants with minor financial contributions from non-vulnerable community members, covering participation costs while ensuring full inclusion. Crowdfunding campaigns can also be integrated into blended models. These approaches ensure that financial barriers are minimized while promoting equitable participation and long-term sustainability of energy communities.

A range of financial actors are critical for supporting the development of energy communities in Slovenia, each with distinct priorities and risk perceptions.

Ministry of the Environment, Climate and Energy is the national authority responsible for energy and climate policy and sets the regulatory and funding framework for energy communities.

As the national manager of support schemes for renewable energy, Borzen administers subsidies and incentive programs, such as grants for solar PV installations and community energy projects.

The European Energy Communities Facility is an EU-level initiative that provides grants, mentoring, and capacity-building support for energy communities across Europe. Its role is to help community projects develop viable business plans, navigate administrative requirements, and access appropriate financing.

In practice, the most inclusive and sustainable approach combines public grants to reduce initial investment, low-interest loans to finance remaining investment, cooperative membership shares or small contributions to give households ownership, and intermediary facilitation to enable participation to vulnerable



households. This multi-layered strategy ensures that vulnerable households can become part of the energy community without financial strain or social stigma, while maintaining long-term financial sustainability for the project.

Advantages and disadvantages of the available financial schemes for energy communities with focus on women

Research indicates that women are frequently underrepresented and encounter systemic obstacles, including limited access to capital, time limitations, and exclusion from technical or financial decision-making spaces⁶. Financing plans that require private investment or technical knowledge up front can unintentionally make these barriers stronger. Women, especially those who are affected by energy poverty, may have less financial capacities, which makes it harder for them to join ownership structures. Because of unequal care responsibilities and risk exposure, models that require high time commitment or financial risks can disproportionately disadvantage women too.

Publicly funded grant programs and subsidized participation models, such as those supported by national initiatives, LEADER, or Borzen, offer benefits for promoting gender inclusion. By diminishing or removing initial financial obligations, they effectively lower the barriers to entry, thereby facilitating wider participation among women, including those from economically disadvantaged households. Additionally, low-interest public loans (Eco Fund) can ensure that individuals and the community do not need such upfront investments, which is particularly important given that women tend to be more exposed to financial insecurity and perceive higher risks in investment decisions. These schemes can therefore support participation and ownership of women and vulnerable households within energy communities.

Blended financing approaches offer strong potential for women's inclusion, especially if they combine the stability of public funding with flexible private contributions. If they are designed with contributions based on income or with solidarity mechanisms, they enable women to participate without stigma or financial strain. In particular, cooperative models that allow non-financial forms of participation (e.g. governance roles, community engagement) can enhance women's empowerment. However, even within these models, there is a risk that financial contributions remain a gatekeeping mechanism.

In terms of risks, public schemes can be very bureaucratic or complicated when it comes to costs and administrative burdens. This can result in disproportionate exclusion of women, especially those constrained by time or lacking administrative resources. To make sure that energy communities are accessible to everyone, there is a need for simplified procedures, involvement of intermediaries like Social Work Centres and implementation of customized support systems. Conversely, initiatives that incorporate capacity building, mentorship, and advisory assistance,

⁶ (Vogel et al. 2024)



such as the EU Energy Communities Facility, can bolster women's capacity to participate and assume leadership roles.

The schemes that offer women and vulnerable households the best chances to get involved socially, economically, and politically are those that have low or no upfront costs, lower financial risk, flexible participation models and strong institutional support.

The most effective methods to do this are through public grants, blended finance, and cooperative structures that include everyone. However, these plans may not be as effective if they do not specifically address gender-specific barriers like time constraints and unequal access to information in their design and implementation. To make sure that financing schemes are gender-responsive, we do not only need innovative financial mechanisms, but also institutional and social changes that actively encourage women to be included and lead in energy communities.

Criteria for selecting suitable financing scheme(s) and selection of best suitable financial scheme(s)

When selecting financing options for energy communities, it's important that they are financially viable, socially inclusive and sustainable in the long term. In the context of the Hrastnik demonstrator, the most important criteria are:

- Affordability, which means that households, especially those affected by energy poverty, can participate without having to pay anything up front;
- Inclusiveness, which means that financing models allow people from different socio-economic groups to participate;
- Risk distribution, which means that financial risks are minimized for vulnerable households and shared across institutions or the community;
- Administrative simplicity, which means that households with limited time, literacy, or digital skills can easily access the program;
- Scalability and replicability, which means that the model can be expanded or adapted to other municipalities;
- Long-term solidarity, meaning that the financing model includes mechanisms — such as an internal solidarity fund financed through higher contributions from wealthier or higher-consuming members — that allow surplus revenue to be redistributed to support energy-poor members over time;
- Flexibility, meaning that households can join or exit the energy community without major complications, including after it has already been established and is operational; and
- Gender responsiveness, which means that women can participate equally in ownership, decision-making, and benefit-sharing.



When applying these criteria to the Slovenian context, different financing schemes have different strengths and weaknesses. Public grant-based programs, like those run by Borzen or LEADER, are affordable and open to everyone because they lower or eliminate upfront costs. But they are often small and depend on funding calls, which can make it hard to plan for the long term. Eco Fund loans are good for scalability and long-term financial health. However, they need other ways to make sure that vulnerable households don't have to pay back loans that they didn't take out. Private contributions promote ownership and sustained involvement; however, they may lack inclusivity if not structured to include contributions based on income. Crowdfunding mechanisms can enhance community engagement, but their reliability and scale remain uncertain in the Slovenian context. EU-level support mechanisms, such as the Energy Communities Facility, contribute significantly to capacity building and project preparation, but they do not necessarily directly address capital investment needs.

Based on this evaluation, **the optimal financing strategy for the Hrastnik demonstrator is a blended financing model that integrates various instruments and stakeholders.** This includes public grants for around 44% (like Borzen, LEADER, or the future Social Climate Plan fund) to lower upfront costs, Eco Fund loans of around 36% to pay for the rest of the project-level investments, and small, flexible contributions of around 20% from cooperative members to make sure that the project is owned and committed to by the community. Municipal support (in the form of money or goods) and help from intermediaries like the social work centre or Development Agency of Zasavje can make this core structure even stronger by making it easier to get to energy vulnerable households. Crowdfunding or other community-based contributions can be used as extra ways to get people involved and make them more financially stable when possible.

The blended approach is well suited to meet the objectives of the demonstrator such as inclusivity, social impact, and sustainability. This model will protect financially at-risk individuals from any monetary risk, will not stigmatize their participation, and will ensure that risks and rewards are equally distributed among the entire community.

Action plan for testing the selected financial scheme(s)

The implementation of the chosen blended finance model in the Hrastnik demonstrator calls for a step-by-step methodology involving stakeholder coordination, and monitoring of performance, where the financial mechanism is tested, analysed, and improved via feedback. The implementation process is divided into preparation and design in which FOCUS will collaborate with the Municipality of Hrastnik, the Regional development agency Zasavje, Local Action Group Zasavje and the energy cooperative. Preparation and design involve establishing the blended finance model (public funding, Eco Fund, and community funding), selecting the target households, especially those facing energy poverty with help from the social work centre, and applying to different funding programs.

In the following phase of mobilisation and contracting, the main activities involve mobilising participants and ensuring their commitment. This phase will involve



community engagement, information sessions, and consultations to ensure that everything is clear and understood by the participants. The membership framework of the community will be developed, along with the development of contribution models (either on an income basis or subsidized contributions) and contracts amongst the various parties involved. The responsibilities will be divided accordingly, with the cooperative managing membership and governance of the community, the municipality coordinating and providing infrastructure, and the financiers (such as the Eco Fund) completing funding arrangements.

The financial plan is implemented in the implementation phase simultaneously with the deployment of renewable energy systems. Payments are made, contributions are received based on the predetermined framework, and expenses are tracked. Special consideration is considered for making sure that vulnerable households do not encounter any up-front charges or surprise costs.

The monitoring and evaluation stage occurs during implementation and after project implementation. Indicators for this stage are number and percentage of households at risk of being involved, participation by gender, decrease in cost of energy. Methods of data gathering include administrative data through the cooperative, surveying participants' households (especially focusing on women and vulnerable people) and financial data.

Several different risks could emerge in connection with the testing process. Financial risks might include delays in payment for services from public funds and inadequate budgeting to cover all costs involved, which can be mitigated by diversifying the sources of financial support. In terms of participation-related risks, those include the lack of interest among vulnerable families who are expected to participate, which can be countered through better engagement strategies and intermediaries, such as the social work centre. Administrative risks, including complex application procedures, can be mitigated by providing hands-on support and clear communication. Social risks, such as perceived stigma or mistrust, require careful design of inclusive participation models and transparent governance.

Policy Recommendations

The design of the financial model for the Hrastnik demonstrator has brought to light several regulatory and policy shortcomings that hinder access and inclusivity in energy communities within Slovenia. One major problem is the poor implementation of the available policy framework, especially the delays in implementing the funding earmarked in the National Action Plan for Energy Poverty. Although financial mechanisms are available, they are not always accessible due to complicated procedures, the need for upfront payment and limited awareness among vulnerable families. Another major shortfall is the failure to mainstream gender in energy and financing policy frameworks, meaning that women's unique challenges in accessing finance, participation in decision-making, and energy projects have not been addressed.



To improve access to finance for energy communities, several regulatory and institutional changes are needed.

First, policymakers should operationalize and expand dedicated funding streams for energy communities, particularly those with the goal of including energy vulnerable households, ensuring that resources are accessible, predictable, and tailored to collective projects. This includes simplifying application procedures, enabling one-stop-shop support mechanisms, and allowing intermediaries (such as municipalities, cooperatives, or social services) to apply on behalf of vulnerable households. Projects that actively include households affected by energy poverty should receive increased and targeted financial support, reflecting the additional effort required for outreach, capacity-building, and inclusive participation, and ensuring that inclusion becomes a core objective rather than an additional burden.

Second, there is a need to enable pre-financing support mechanisms. Vulnerable households and small community projects may be excluded due to the requirement to pre-finance investments, even in cases when grants are available. To ensure that participation is not hindered by a lack of initial financing, policymakers should implement systems that offer upfront financing (such as advance payments or guarantees).

Third, to guarantee that energy poverty measures, renewable energy policies, and social support systems are aligned, there needs to be more institutional coordination between ministries, financial institutions, municipalities, and social services.

To overcome obstacles related to financial literacy, time restrictions, and information availability, financial programs should promote capacity-building, mentoring, and advising services specifically designed for women. Furthermore, to guarantee that women, especially those in low-income households, can participate without financial risk or stigma, flexible participation models—such as income-based contributions or non-financial forms of involvement—should be explicitly promoted. Gender-disaggregated indicators should be included in data collection and monitoring frameworks to track leadership roles, benefits, and participation.

Several practices emerging from the demonstrator have strong potential for scaling and policy integration. These include flexible cooperative structures that allow inclusive participation and shared ownership; the use of intermediary actors (like social work centres) to identify and support vulnerable households; and blended financing models that combine public funding, low-interest loans, and income-based community contributions to lower financial barriers. Successful pilot programs should be incorporated into long-term funding programs and legislative frameworks at the national level, while ongoing support for capacity-building efforts, like the Energy Communities Facility, should be maintained and expanded at the EU level.

Overall, policy support should aim to address regulatory gaps, simplify access to finance, and embed gender-responsive approaches. In this way policymakers can significantly enhance the role of energy communities in delivering a just and inclusive energy transition.



Guidelines for replications in other contexts

The Hrastnik demonstrator provides several important lessons for the development of inclusive, community-based energy financing models. One key lesson is that financial mechanisms alone are not sufficient; successful inclusion of vulnerable households depends equally on trusted intermediaries, simplified administrative procedures, and sustained community engagement. In particular, the involvement of Social Work Centres, other social actors, such as Red Cross or Caritas, municipalities, and regional development agencies has proven essential for reaching energy-poor households, reducing mistrust, and ensuring that participation is socially as well as financially feasible. Another important lesson is that blended finance structures are most effective when they explicitly remove upfront cost barriers and distribute financial risk away from vulnerable households, while still enabling a sense of ownership and participation.

In terms of transferability, several elements of the financing approach are replicable across different contexts. Blended financing models that combine public grants, low-interest loans, and community contributions can be adapted in most EU Member States, especially where similar public funding instruments or energy poverty programs exist. The use of cooperative structures with flexible or income-adjusted contributions is also broadly transferable, as it allows inclusive participation without requiring uniform financial capacity. Likewise, the role of intermediary actors—such as social services, municipalities, and regional agencies—is a universally relevant mechanism for reducing administrative and informational barriers and can be embedded in different governance systems.

However, certain elements require adaptation to local conditions. These include the specific configuration of funding instruments, which depends on national and regional policy frameworks, the availability of public support schemes, and the maturity of energy community ecosystems. In addition, cultural and gender norms may affect how women and vulnerable groups engage with energy initiatives, requiring tailored outreach and communication strategies.



Strategy on addressing social challenges for energy poverty alleviation

This strategy addresses energy poverty through a people-centred approach, recognising that technical solutions alone are insufficient without addressing the social barriers that prevent vulnerable households from benefiting. Demonstrators will develop tailored interventions that account for community-specific factors including living conditions, time constraints, literacy levels, access to information, social exclusion, language barriers, and gender dynamics. The strategy will also incorporate safeguards against unintended consequences such as gentrification or displacement of vulnerable residents following renovation works. Additionally, it will identify pathways to overcome administrative and regulatory obstacles, whether directly energy-related or stemming from broader issues like building management structures, split incentives between landlords and tenants, or spatial constraints.

Introduction and objectives

This strategy aims to foster supportive social conditions for households affected by energy poverty by addressing a range of interconnected social challenges. Limited income, inadequate housing conditions, health issues, social isolation, rising energy costs, cultural differences, language barriers and stigmatisation can all restrict the ability of vulnerable groups to participate in energy initiatives such as renovation programmes and energy community projects.

The strategy seeks to reduce these barriers, strengthen social support systems, and enable vulnerable households to participate meaningfully in the energy transition.

Outline of key social challenges linked to energy poverty

In Slovenia, the share of households experiencing energy poverty in 2025 was higher among people aged 65 years and over (16.9%) according to the national statistical office (SURS)⁷. Elderly women living alone are particularly vulnerable to energy poverty. Among this group, 16,6% of women experienced energy poverty in 2025 (SURS). Compared with 2024, the share of older women living alone experiencing energy poverty increased from 14.5% to 16.6% in 2025 (SURS)⁸

Among households with dependent children, single parents were disproportionately affected, with an energy poverty rate of 11.5%, compared with less than 5% for other households with dependent children. Gender differences

⁷ Energy poverty, 2025: <https://www.stat.si/StatWeb/en/News/Index/14211>

⁸

<https://pxweb.stat.si/SiStatData/pxweb/sl/Data/Data/0886702S.px/table/tableViewLayout2/>



are evident among single-person households, where 15% of women are affected by energy poverty compared with 13.3% of men (SURs)⁹.

Tenants are also significantly affected, with 27,000 tenants in Slovenia experiencing energy poverty in 2025 (SURs)¹⁰, up from 25,000 in 2020. Hardships include inability to adequately heat or cool homes, higher energy costs relative to income, and limited access to energy services.

The statistical region of Zasavska where the demonstrator in Hrastnik is located, recorded the highest share of households affected by energy poverty (12.3%) while for instance the Gorenjska statistical region had one of the lowest shares (3,7%). Regional disparities are then quite important.

Structural inequalities including income constraints, gender, age, household composition, health status, and housing conditions significantly shape vulnerability to energy poverty. For example, elderly women living alone often face compounded disadvantages related to both low income and single occupancy. Evidence shows that women are more exposed due to several factors: lower incomes and pensions, greater health vulnerability to cold and heat, and the unequal burden of care work and household energy management. Tenants may also have limited control over energy efficiency improvements in their homes, increasing their exposure to poor housing conditions and high energy costs.

Energy poverty can lead to poorer health (due to cold or damp housing), hinder educational activities (through inadequate lighting or heating for study), and increase social exclusion as households limit energy use to save costs, reducing participation in social or cultural activities.

Community profiling and vulnerability assessment

Several demographic, socio-economic, and housing-related factors shape the community in Hrastnik and influence vulnerability to energy poverty. Hrastnik's history as a former coal-mining municipality has left a lasting legacy. Many older residents spent their working lives in physically demanding industries and today face chronic health problems, increasing their need for adequacy heated homes while often relying on modest pensions. At the same time, the municipality has a relatively large population of immigrants, some of whom face language barriers, lower levels of social integration, and different cultural backgrounds, which can limit access to information about available support schemes and participation in local energy initiatives. Hrastnik is among the Slovenian municipalities with the highest proportion of publicly owned non-profit rental housing.

Age is an important factor, as elderly residents may be less likely to engage in long-term renovation planning. Gender also plays a role, particularly for older

⁹ Energy poverty by household type, Slovenia, annually:
<https://pxweb.stat.si/SiStatData/pxweb/en/Data/Data/0886702S.px/>

¹⁰ Energy poverty by accommodation tenure status, Slovenia, annually:
<https://pxweb.stat.si/SiStatData/pxweb/en/Data/Data/0886703S.px/>



women living alone, who are often at greater risk of financial hardship. Family responsibilities, including childcare and informal caregiving duties, can further reduce the time, financial resources, and capacity available for making energy-related decisions or participating in energy-saving measures.

In addition, low income, limited education and energy literacy, language barriers among non-native speakers, and inadequate housing conditions further increase the risk of energy poverty and reduce access to existing support mechanisms and opportunities for improving energy efficiency.

Discussions with local stakeholders and in particular social actors, also highlighted that energy poverty is often a transitional rather than a permanent conditions. Households may become vulnerable following major life events, such as unemployment, illness, retirement, or the death of a spouse, but some are eventually able to improve their circumstances. This suggests that energy communities should be designed with flexible participation arrangements, allowing households to join when they need support and to exit without unnecessary barriers once their situation improves.

Relevant indicators are household composition (single-person or elderly households), age, gender, income level, tenancy status, educational attainment, language proficiency, energy expenditures relative to income, and housing retrofit feasibility and the burden or difficulties of paying the energy bills.

Many residents in Hrastnik experience barriers that can limit their participation in energy transition initiatives. As a former mining municipality with an ageing population, social isolation and reduced mobility are common among older residents, particularly those living alone or coping with chronic health conditions. Caregiving responsibilities can further constrain the time available to seek information or participate in community activities. Hrastnik is also home to a relatively large immigrant population, some of whom face language barriers and may have limited access to information about available support or lower levels of trust in public institutions. Households living in municipal and non-profit rental housing may be reluctant to engage in renovation programmes because of uncertainty about future housing costs or perceived rent increases. Limited financial and digital literacy, together with constrained household budgets, can further reduce the ability to navigate support schemes, invest in energy efficiency measures, or participate in an energy community, reinforcing both energy poverty and broader forms of social exclusion.

Tailor-made intervention design

Technical

- Short-term: Prioritise technical solutions that are compatible with the characteristics of Hrastnik's housing stock and require minimal upfront investment, while effectively addressing the needs of households affected



by energy poverty. For example, renewable energy installations can be located in areas that do not require additional structural investments, such as open parking areas or roofs that are unsuitable for solar panel installation due to structural limitations.

- Short-term: a) Investing in the full integration of households experiencing energy poverty into community energy infrastructure, including energy storage solutions that enhance reliability and ensure continuous and affordable access to energy. b) improving the energy literacy of the involved households, c) familiarising households with simple technical measures that can decrease energy consumption (example of innovative workshop event with solar kitchen in Hrastnik planned in autumn 2026)
- Long term: Ensure that maintenance costs within the energy community remain reasonable to sustain long-term affordability for participating households. Investments in additional community facilities and services should be introduced progressively, allowing households to adapt gradually and avoiding large upfront costs. For example, priority can first be given to essential home electricity solutions, while more advanced shared services, such as community mobility options, can be developed at a later stage, considering mobility patterns in Hrastnik in its surroundings.

Administrative

- Short term: Support flexible membership models so households can easily join or leave the energy cooperative. For example, create an association linked to the cooperative with simplified membership procedures. Households become members of the association, which acts as a guarantee mechanism, making participation easier and more accessible than full cooperative membership.

Financial

- Short term: Subsidize membership fees and upfront investments for households affected by energy poverty. Use crowdfunding, civil society donations, and public grants from the municipality to cover these costs.
- Long term: Establish a reserve fund for occasional unpaid energy bills and potential new investments, as well as for ensuring the means for new installations when old ones become dysfunctional.

Behavioural

- Short-term: Organize training sessions on solar energy use, including tips on optimal times for operating home devices, understanding bills, and maximizing benefits from community solar participation.



- Long-term: Develop a welfare model within the energy cooperative to support households in energy management and participation.

Social support

- Short-term: Provide targeted and accessible information directly to inhabitants of Hrastnik in need through joint information sessions organised in cooperation with social workers, local district communities, and other trusted community actors.
- Short and long term: Create safe spaces for expression where energy-vulnerable households can gain confidence, share experiences, and build empowerment.
- Short-term: Assist households in navigating program enrolment, provide language support, and offer help for families with children or elderly residents.
- Long-term: Ensure equitable participation by fostering trust and inclusion within the broader community.

The effective implementation of the planned interventions requires coordinated action among multiple stakeholders, supported by adequate financial, technical, organisational, and human resources. Rather than relying on a single actor, successful delivery depends on clearly defined responsibilities, strong partnerships, and the capacities needed to engage vulnerable households and sustain community participation. The table below summarises the key implementation requirements for each proposed intervention, including the lead and supporting organisations, as well as the resources and capacities required.

Intervention	Lead actor(s)	Supporting actors	Key resources / requirements
Identification and engagement of energy-poor households	Centre for Social Work Hrastnik	Red Cross, Patronage nurses, Pensioners' Association, Municipality	Outreach staff, community mediators, multilingual information materials, trust-building activities
Energy advice and energy audits	Energy Cooperative Zeleni Hrastnik	Energy agencies, Municipality, technical experts	Energy auditors, funding for audits, educational materials



Financial support for participation	Municipality, Ministry of Environment, Climate and Energy	Regional Agency Zasavje, LAG Zasavje	Public grants, subsidies, crowdfunding, administrative support
Community engagement and awareness raising	Municipality, Institute for Innovation and Development UL, Energy Cooperative	NGOs, local associations	Workshops, communication materials, local ambassadors, training
Monitoring of social inclusion and equity	Municipality, Institute for Innovation and Development UL	Ministry, Centre for Social Work	Monitoring indicators, evaluation system, data collection

Appropriate engagement and communication strategies will focus on accessibility, trust, and active participation in Hrastnik. Information sessions will be organised at convenient times, such as evenings or weekends, and supported with multilingual and easy-to-understand communication materials that clearly explain both the benefits and potential risks of participation. Trust will be strengthened through regular community meetings, transparent communication about pricing, savings, and decision-making processes, and the involvement of peer ambassadors from within the community. Participatory governance within the energy cooperative, safe spaces for vulnerable households to express concerns, and practical support measures such as childcare during meetings will further encourage inclusion and long-term engagement. Energy literacy initiatives integrated into local education and community programmes in Hrastnik can also help build awareness and capacity over time.

Short-term measures will focus on clear guidelines for equitable and inclusive practices, which can help ensure that low-income residents, tenants, elderly people, and other underrepresented groups in Hrastnik are not excluded from energy transition projects. In parallel, safeguards against eviction and anti-displacement measures will be integrated into renovation and energy community initiatives, particularly in areas where improvements could increase housing costs.

In the longer term, more structural measures are needed to address the root causes of energy poverty and housing insecurity. Cooperative models can contribute to maintaining long-term affordable access to energy by prioritising collective benefits over profit generation. Public policies should also support affordability through stable public funding schemes, rent regulation or other mechanisms limiting excessive increases in the cost of living, and by promoting a sufficient supply of quality affordable housing in competitive housing markets. In this context, dedicated public funding schemes aimed at protecting vulnerable households are particularly important, such as the call for projects currently being developed with the Ministry of Environment, Energy and Climate.



Addressing administrative and regulatory barriers

Administrative and regulatory requirements can create significant barriers for the implementation of demonstrator interventions, particularly for vulnerable households. Formal membership procedures in energy communities may involve financial contributions, administrative paperwork, or digital processes that can discourage participation from socially or economically vulnerable groups. In addition, legal obligations related to cooperative governance may appear complex, risky, or insufficiently clear for potential members.

- In the case of project based on private complex buildings, condominium decision-making procedures are often slow and prone to conflicts, which can significantly delay or block collective renovation or renewable energy projects. For this reason, we are also exploring opportunities to install solar panels on public properties, where decision-making processes may be more straightforward.
- Technical and regulatory barriers also remain important, particularly delays in grid connection approvals. The shift from annual net metering to the current net billing scheme has reduced the attractiveness of new energy community projects. As surplus electricity exported to the grid is compensated at lower rates than the cost of electricity imported, the financial viability of such initiatives has become more uncertain, particularly given the challenges of achieving high levels of self-consumption within 15-minute settlement periods.

Households may refuse participation if benefits are unclear or administrative burden is high. Depending on vulnerable groups, they might be additional barriers:

- **Tenants**, who lack decision-making power.
- **Elderly residents**, who may struggle with digital platforms.
- **Low-income households**, who cannot pre-finance investments while waiting for reimbursement.
- **Households with low literacy or language barriers**, who face difficulty understanding contracts.
- **Households, affected by energy poverty**, who are more risk-averse and fear unexpected costs.

To address non-energy-related barriers, several practical and regulatory changes could be recommended. First, stronger cooperation with local social centres and youth organisations will help identify households experiencing energy poverty and support their participation in community energy initiatives.

Municipalities should play an active role by identifying and making available suitable public or private properties for renewable energy installations. Their involvement in energy communities will help provide institutional guarantees,



facilitate permitting procedures, and support the establishment of easements required for solar panel installations.

To improve accessibility for vulnerable households, a dedicated association for households affected by energy poverty could be established and linked to the cooperative structure. This would allow participation in the energy community through a more flexible and simplified membership model. Administrative accessibility should also be improved through paper-based and in-person application options, as well as simplified contracts accompanied by clear and plain-language summaries. Community mediators could further support households in understanding procedures, rights, and obligations.

To address split incentives between landlords and tenants, voluntary agreements could be developed and promoted, including template contracts. These agreements could guarantee that participation in solar or renovation projects does not lead to rent increases, while ensuring fair distribution of costs and savings between property owners and tenants through shared-benefit models. In parallel, targeted public subsidies could be introduced for landlords who include vulnerable tenants in such projects.

Finally, regulatory frameworks could be simplified by introducing a specific legal status for energy communities with reduced administrative and reporting burdens, making collective initiatives easier to establish and manage.

Monitoring, evaluation, and adaptation

The following indicators will be used to measure social impact and improvements in well-being:

- Reduction in energy bills and energy cost burden
- Number of energy-poor households participating
- Self-reported thermal comfort and well-being
- Reduction in payment arrears
- Participation rate in community governance
- Perceived sense of inclusion and empowerment

Feedback from vulnerable households and community members should be collected through accessible and inclusive methods that also integrate lived experiences. Possible approaches include regular short surveys in simple and multilingual formats, small group discussions or community meetings, one-to-one interviews with vulnerable households of the municipality of Hrastrnik, and the involvement of peer representatives sharing their lived experiences. Anonymous feedback channels should also be provided to ensure that participants can express concerns safely and openly.



Interventions should remain adaptable through annual reviews of participation and savings data, regular meetings of the cooperative board including social representatives, and periodic reassessments of administrative, financial, and social barriers. Flexibility should also be maintained to adjust membership fees and support mechanisms according to evolving needs. In addition, a dedicated solidarity fund could help cover temporary debt related to unpaid energy bills for vulnerable households facing short-term financial difficulties.

A continuous feedback loop should be established to collect feedback, review outcomes, adjust measures, and communicate changes transparently to members. Pilot testing of new measures before wider implementation, together with ongoing dialogue with municipalities and project partners, can further support continuous improvement.

Policy integration and replication

Key lessons learned from the process include the importance of providing simplified and low-risk participation models for vulnerable households. In practice, administrative and financial barriers often represent greater obstacles than technical challenges. The experience also showed that peer support, mentoring, and strong community engagement are essential to build trust and encourage participation. Finally, flexibility in governance structures and membership conditions is crucial to ensure inclusiveness and adapt to the diverse needs of participants.

Policies should support the participation of households affected by energy poverty through targeted subsidies and inclusive financing mechanisms. Social criteria should be better integrated into energy and housing regulations, while legal frameworks for community energy projects should remain flexible and accessible. Regulatory frameworks could be simplified by introducing a specific legal status for energy communities with reduced administrative and reporting burdens, making collective initiatives easier to establish and manage. Long-term resilience also requires built-in mechanisms for monitoring, feedback, and continuous adaptation.

Transferable elements include community engagement strategies, peer mentoring, simplified membership models, and financial support mechanisms. However, implementation must be adapted to local regulatory frameworks, housing conditions, tenant–landlord relations, cultural or language barriers, and available funding opportunities.

Successful approaches should be documented clearly, including both processes and outcomes. Pilot projects can help test and refine measures before wider implementation. Early engagement with local authorities is essential, and support mechanisms should always be tailored to the specific social, economic, and regulatory context of each community.



Feasibility of technical solutions at demonstrator level

This strategy will support the technical design of energy community in Hrastnik. It will support involvement of women, affected by energy poverty, in existing or new energy community projects. Feasibility analysis will allow Hrastnik demonstrator to tailor the community design to the needs of the vulnerable people, as well as choose the most suitable technical solution for the needs.

Usually, the key implementation steps for a new energy community project are the following:

Step 1 - Identifying a suitable location: For this step, the involvement of the municipality is important, as ideally the space to install the powerplant should be publicly owned. If there is an area identified with a concentration of households, affected by energy poverty, this can be the primary area of focus. The location selection is linked to community rules and grid charges, which will be discussed in the next steps.

Step 2 – Promotion of the idea of renewables community: Communication plan elaboration. Presenting the idea about the community, both in public information channels and through specific channels for households, affected by energy poverty, such as the centres for social work or social and charitable NGO. Presentation at an event and in one-on-one meetings on what is involved, what are the benefits and obligations, etc. Collect interest from the people.

Step 3 – Mapping the situation: Mapping potentials (both technical and human), use of energy, availability of networks, location of transformer stations. Creating situation analysis/snapshot.

Step 4 – Legal framework: Based on the situation analysis and discussion with the interested stakeholders, determining the legal format that best suits the community. The legal framework will need to be under the new regulation in Slovenia, hence the financing for the participation in the project will need to be carefully considered (see next step). In the legal framework it is important to stress that ideally all members of the new energy community should also become members of the cooperative, which is already established in Hrastnik, and then participate equally in the management of the cooperative.

Step 5 – Technical plan: Deciding on technology. Creating a technical plan. Contacting technology providers and obtaining quotes for the installation.

Step 6 – Financial plan: Elaborating financial plan for the community. It is planned that the participation of the households, affected by energy poverty, will be financed from the fund, which is planned in the Energy poverty action plan of Slovenia for 2023-2026, where 5 million EUR are reserved for supporting of inclusion of people, affected by energy poverty, in energy communities. Should this fund not be operational, the community will consider other financing options, such as asking that members of the community, who are not affected by energy poverty, pay a small additional contribution (e.g. 10%) for covering the participation of the people, affected by energy poverty.



Step 7 – Contract between members of the community: Determining the division of the shares. Organising legal aspects, such as access rights for used roofs. Negotiating the contract. Signing the contract by all members.

Step 8 – Obtaining permission for connection: Filing in documents for obtaining permission from the electricity distribution company. Obtaining the permission.

Step 9 – Installing the power plant: Selecting the company to install the power plant. Installing the power plant. Signing a contract with the energy supplier. Registering the power plant. Launching the start of operations.

This strategy will mainly look into steps 1 and 5, as described above.

Energy community technical solutions

The identification of a suitable location is a critical first step in the development of an energy community. The involvement of the Hrastnik municipality is essential, as the preferred option is to use publicly owned land or buildings. Where possible, priority is given to areas with a concentration of households affected by energy poverty, in order to maximise social impact and ensure territorial relevance. Although location is no longer a formal constraint for grid connection in Slovenia, it remains a strategic factor influencing project feasibility, cost efficiency, and overall system design.

In the Hrastnik demonstrator, several renewable energy options were initially assessed. These included

- small-scale hydropower plant, given the presence of a watercourse near a housing facility for vulnerable users, and
- waste heat recovery from nearby industrial activity.

However, approximate cost estimates were done for both options and both of them were excluded due to either high costs or limited suitability for the project context (project could only focus on one housing facility for vulnerable people, where the fluctuation of people is high and membership in a community would not be feasible).

The next option was assessing the photovoltaic option as currently most economically and legally feasible solution. Solar potential on public buildings was then assessed using the PVWatts Calculator. Municipal facilities such as the sports hall and the swimming pool were initially considered but later excluded due to structural limitations of the roofs, which were not suitable for additional PV load.



PVWatts calculator results for the Swimming pool (Novi Log 1b, 1430 Hrastnik):

- **Annual Energy Production: 180,304 kWh/year**

Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)
January	1.51	6,490
February	2.66	10,371
March	3.68	15,258
April	4.73	18,483
May	5.29	20,730
June	6.14	22,826
July	6.24	23,497
August	5.81	22,166
September	4.44	16,853
October	2.79	11,299
November	1.52	6,164
December	1.44	6,167
Annual	3.85	180,304

Source: U.S. Department of Energy / National Laboratory of the Rockies (NLR), PVWatts® Calculator; simulation performed by the author, 12 August 2026, <https://pvwatts.nrel.gov/>.

PVWatts calculator results for sports hall (Novi Log 1, 1430 Hrastnik):

- **Annual Energy Production: 232,413 kWh/year**

Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)
January	1.51	8,366
February	2.66	13,368
March	3.68	19,668
April	4.73	23,824
May	5.29	26,722
June	6.14	29,423



July	6.24	30,288
August	5.81	28,573
September	4.44	21,724
October	2.79	14,565
November	1.52	7,945
December	1.44	7,949
Annual	3.85	232,415

Source: U.S. Department of Energy / National Laboratory of the Rockies (NLR), PVWatts® Calculator; simulation performed by the author, 12 August 2026, <https://pvwatts.nrel.gov/>.

Due to regulations that stipulate that public parking should be used as sites for installing PV powerplants, the next possible step was checking the public parking's. Three municipal parking areas in the main settlement, including one near the town hall, were also discussed with the municipality for potential solar canopy installations. However, comparable experiences in Slovenia show that such solutions involve significant additional costs linked to structural works and supporting infrastructure, including potential storage systems, which would make it more difficult for involving vulnerable households.

PVWatts calculator results for the parking next to the Municipality - Plot 636

- **Annual Energy Production: 39,401 kWh/year***

Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)
January	1.52	1,424
February	2.66	2,267
March	3.68	3,333
April	4.73	4,037
May	5.29	4,528
June	6.14	4,986
July	6.24	5,132
August	5.81	4,842
September	4.44	3,681
October	2.80	2,468
November	1.53	1,349
December	1.45	1,355
Annual	3.86	39,402



Source: U.S. Department of Energy / National Laboratory of the Rockies (NLR), PVWatts® Calculator; simulation performed by the author, 12 August 2026, <https://pvwatts.nrel.gov/>.

PVWatts calculator results for the parking next to a residential area – Plot 635/4

- **Annual Energy Production: 156,871 kWh/year***

Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)
January	1.52	5,646
February	2.66	9,023
March	3.68	13,275
April	4.73	16,081
May	5.29	18,036
June	6.14	19,860
July	6.24	20,443
August	5.81	19,286
September	4.44	14,663
October	2.80	9,831
November	1.53	5,363
December	1.45	5,365
Annual	3.86	156,872

Source: U.S. Department of Energy / National Laboratory of the Rockies (NLR), PVWatts® Calculator; simulation performed by the author, 12 August 2026, <https://pvwatts.nrel.gov/>.

PVWatts calculator results for the parking next to a residential area – Plot 506/3

- **Annual Energy Production: 57,171 kWh/year**

Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)
January	1.52	2,066
February	2.66	3,290
March	3.68	4,836
April	4.73	5,858
May	5.29	6,570



June	6.14	7,234
July	6.24	7,447
August	5.81	7,025
September	4.44	5,341
October	2.80	3,582
November	1.53	1,957
December	1.45	1,965
Annual	3.86	57,171

Source: U.S. Department of Energy / National Laboratory of the Rockies (NLR), PVWatts® Calculator; simulation performed by the author, 12 August 2026, <https://pvwatts.nrel.gov/>.

As a result of these assessments, the feasibility study was finally redirected towards a combined site in Dol pri Hrastniku, focusing on the primary school and kindergarten:

- Primary school Osnovna šola Narodnega Heroja Rajka Hrastnik, located at Planinska cesta 3, Dol pri Hrastniku
- Kindergarten Vrtec Hrastnik located at Planinska cesta 5, Dol pri Hrastniku.

PVWatts calculator results for the primary school

- **Annual Energy Production: 71,192 kWh/year**

Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)
January	1.52	2.572
February	2.66	4.096
March	3.68	6.022
April	4.73	7.295
May	5.29	8.182
June	6.14	9.009
July	6.24	9.274
August	5.81	8.749
September	4.44	6.651
October	2.80	4.460
November	1.53	2.437



December	1.45	2.445
Annual	3.86	71.192

Source: U.S. Department of Energy / National Laboratory of the Rockies (NLR), PVWatts® Calculator; simulation performed by the author, 12 August 2026, <https://pvwatts.nrel.gov/>.

PVWatts calculator results for the kindergarten

- **Annual Energy Production: 66,911 kWh/year**

Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)
January	1.52	2.418
February	2.66	3.850
March	3.68	5.660
April	4.73	6.856
May	5.29	7.960
June	6.14	8.467
July	6.24	8.716
August	5.81	8.222
September	4.44	6.251
October	2.80	4.192
November	1.53	2.290
December	1.45	2.299
Annual	3.86	66.911

Source: U.S. Department of Energy / National Laboratory of the Rockies (NLR), PVWatts® Calculator; simulation performed by the author, 12 August 2026, <https://pvwatts.nrel.gov/>.

The strategy is to combine both sites into a shared energy community covering the electricity needs of both public buildings (school and kindergarten) while also enabling participation of vulnerable and other interested households.

Based on this selection of the location, a feasibility study will be done, which will include the preparatory technical aspects, such as:

- Analysis of rooftop capacity for new renewable generation
- Analysis of electricity consumption profiles of school and kindergarten (15-minute data)
- Concept design of the energy community and calculation of surplus energy available for members



- Feasibility study including detailed economic assessment and savings calculations
- Presentation of the preliminary design to stakeholders.

In parallel, the feasibility of a business model will be estimated, to ensure that the business model can be based on involvement of vulnerable households. The development phase of the business model includes:

- Preparation and submission of grid connection approval
- Support in identifying potential community members (where relevant during the design phase)
- Analysis of consumption and savings for additional potential members
- Adaptation of the business model based on stakeholder feedback

Overall, the selection of location remains a decisive starting factor. It directly influences project affordability, optimisation of solar yield, and balancing of production profiles with municipal daytime consumption and household evening demand.

Outlining possible technical solutions with focus on involving vulnerable people

For the Hrastnik demonstrator, the most suitable technical solution seems community solar PV, but some further options can be explored, such as peer-to-peer energy sharing, which is enabled in Slovenia as of 1 July 2026, combined with community batteries. These models allow households that cannot install solar panels themselves—such as low-income households—to benefit from locally produced renewable energy. Community batteries further increase self-consumption and improve reliability, while time-of-use incentives can help households reduce bills by shifting consumption to periods of high renewable generation. However, time-of-use schemes should be accompanied by energy literacy support to ensure vulnerable households can participate effectively rather than being disadvantaged by complex tariffs.

The main barriers preventing vulnerable households from engaging in energy communities are not primarily technical, but financial, administrative, and social. Upfront investment requirements exclude many low-income households, while complex procedures, digital tools, and legal requirements create additional hurdles. Vulnerable groups may also face limited energy literacy, lack of information, language barriers, social stigma associated with energy poverty, and lack of time due to caregiving responsibilities. All these barriers have been considered in the design of participatory approaches (see Strategy on engagement of citizens and community).

To ensure fairness, transparency, and trust, scheme design should follow an inclusive cooperative model with clear governance rules and active participation of vulnerable households in decision-making. Membership conditions should be flexible, allowing households to join or leave without major penalties. Financial



participation should be adapted to income levels, with grants, or subsidised membership covering upfront costs for vulnerable members. The selected option of rooftop solar PV enables such options; hence it is assessed to be the most suitable for the participation of the vulnerable households.

Assessment of energy-sharing and demand-response schemes with view on demonstrator's needs and focus on engagement of vulnerable women

Although the demonstrator is not focused on energy sharing and demand-response measures, these two aspects are still relevant for the Hrastrnik demonstrator. Namely, energy-sharing on community solar PV and shared battery storage are the best match with the planned technical infrastructure and local energy profile. They enable participation of households that cannot install their own renewable energy systems, including low-income households. Shared generation and storage also help improve self-consumption and distribute renewable energy benefits more equitably across the community.

Demand-response measures can further reduce energy costs and increase the value of community-produced electricity. Demand-response measures should focus on encouraging participants to shift flexible consumption, such as running appliances, to periods of high solar generation. However, these measures require a certain level of energy literacy and flexibility in daily routines, this is why it is also planned to put emphasis on the energy literacy training among participating vulnerable households.

Lessons learned and reflections on the process

The process showed that technical feasibility depends not only on renewable energy potential but also on building suitability, grid conditions, financing, and the ability to involve vulnerable households. Publicly owned sites and shared infrastructure emerged as particularly important for enabling participation.

A major challenge was balancing technical, financial, and social requirements under the new regulatory framework and ensuring that households affected by energy poverty could participate without upfront costs. Feedback from vulnerable participants highlighted the need for simple, flexible participation arrangements and clear communication.

Future replications should combine technical assessments with early stakeholder engagement, prioritise shared solar solutions, and integrate financing and governance models that facilitate the participation of vulnerable households, including women and other underrepresented groups.



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Report on citizen-led strategies developed at GENDER4POWER demonstrator in La Bordeta, Spain

Deliverable 4.1

August 2026

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Introduction

This document outlines strategies for reducing energy poverty, drawing on the insights, expertise, and practical experiences gained from the GENDER4POWER pilot areas (including Ambassadors) and project partners. The strategies presented here are the result of a collaborative process between project partners, based on previous analyses (WP2) and participatory activities implemented (WP3). This document outlines the core pillars of the various strategies, including the tools, stakeholder engagement, and analytical frameworks employed throughout the development process.

Pilot context

Comunitat Energètica de La Bordeta (CELB) is an energy community based in the La Bordeta neighbourhood of Barcelona. It is a citizen-driven initiative born in 2021 with a bottom-up approach, thanks to the motivation of local people and entities. The aim is to strengthen energy rights access and address social and environmental challenges with a fair, inclusive, and community-led approach.

Nowadays, the cooperative already has 90 members, including local entities (14%) and individuals (86%); of these, 45% identify as women, 51% as men, and 4% with other identities. CELB is now in a significant expansion phase, expecting to grow to around 200 members by mid-2027. This diverse and participatory base is key to promoting innovative projects that address problems such as energy poverty and promote social inclusion.

CELB already has and operates 48 kW of PV plants, in the form of collective self-consumption within its members. In addition, it is working to address energy poverty in the neighborhood; a Solidarity Fund was created at the end of 2024 and is currently in a test phase, with the goal of allowing free participation in the services to members in a situation of energy poverty or vulnerability. In parallel, the cooperative works to promote energy literacy and get energy topics closer to the people, through the organization of workshops, presentations and cultural activities such as the projection of documentaries.

Between mid-2026 and the beginning of 2027, two new PV plants are being installed, and a new service of shared e-mobility, including an e-vehicle and 2 EV chargers, will be launched. In addition, CELB is working to start the renovation process of an old building with low energy efficiency conditions, where one of the active PV plants is installed, and where many of the cooperative members live. All these activities have to be accompanied by an important new members' campaign, which is designed with a significant sensitivity to the gender & energy nexus and inclusivity.



Strategy on engagement of citizens and community

This strategy aims at enhancing the participation of vulnerable households in actions to alleviate energy poverty. It helps to introduce inclusive governance models at the neighbourhood and district levels, incorporating participatory decision-making methods to amplify diverse voices. Furthermore, it contributes to boosting energy literacy through user-friendly communication and gender perspectives, fostering trust in various energy solutions, and creating awareness spaces.

Short introduction to inclusive governance models and participatory decision making, with focus on gender perspectives and fostering trust

Inclusive governance models and participatory decision making are not merely ideals; they are practical approaches to building societies that are equitable, resilient, and trusted by their citizens. By embedding gender perspectives into governance structures, institutions can ensure that proposed solutions reflect the lived realities of all people. Ultimately, fostering trust through inclusion strengthens democracy, enhances legitimacy, and creates pathways for sustainable development.

Inclusive governance refers to frameworks and practices that prioritize representation, equity, and accountability. Unlike traditional top-down models, inclusive governance integrates diverse perspectives into the formulation and implementation of solutions. It recognizes that sustainable solutions to social, economic, and environmental challenges require input from all stakeholders, especially those historically excluded from decision-making.

Participatory decision-making is the practical mechanism through which inclusive governance is realized. It involves creating platforms where citizens can contribute ideas, deliberate on policies, and influence outcomes. This can take the form of community consultations, participatory budgeting, or digital platforms that enable broad engagement.

Gender perspectives are central to inclusive governance because women and gender minorities often face systemic barriers to participation. Despite progress, many governance structures remain male-dominated, limiting the scope of perspectives considered in decision-making. Integrating gender perspectives involves not only increasing representation but also reshaping institutional cultures to value inclusivity. Studies show that when women participate in governance, policies are more likely to address issues such as healthcare, education, and social welfare. Co-creation processes should be designed to identify and address gendered impacts of proposed solutions, ensuring equitable outcomes.

Trust is both a prerequisite and an outcome of inclusive governance. When citizens perceive that their voices are valued and their concerns addressed, they are more likely to trust institutions. Conversely, exclusion breeds scepticism and disengagement.



Strategies to foster trust include:

- Transparency in processes: Clear communication about how decisions are made and implemented.
- Feedback mechanisms: Allowing citizens to see how their input influences outcomes.
- Capacity building: Equipping marginalized groups with skills and resources to participate effectively.
- Cultural change: Promoting respect, empathy, and collaboration within institutions.

It is against this backdrop that the GENDER4POWER strategy for engaging the citizens and community is developed.

Defining the purpose and scope of the collaborative process

The process has the main goal of creating a positive, suitable, and supportive environment where local entities can collaborate to address energy poverty with a gender perspective approach. The objective is to interact with several local entities, including municipal experts, universities, and associations working with vulnerable collectives, to create a cultural change in the neighbourhood and to be able to approach these social groups, creating a trust space where they can comfortably be involved in the EC.

To do this, new collaborations, contacts, and bonds will have to be created with local actors. This will allow taking advantage of all the knowledge and skills already existing in the ecosystem, without replicating efforts, and of the networks and trust that other entities already have with people suffering energy poverty and other types of vulnerability in the territory. This will help CELB to create trust and connection with these people, to get them on board with its projects, and to provide real, useful support to these collectives by focusing its efforts and resources on the support aspects.

The process will be considered successful if these new collaborations with the entities are created, and the usefulness will be in two directions (not only benefiting CELB). In addition, the crucial criteria will be the final decision of people from vulnerable groups to get closer to CELB and, eventually, to join the projects and activities organized. Because of this, the effectiveness criteria will include participation in activities of vulnerable collectives, the creation of collaborations with entities, the improvement of the inclusiveness of the energy ecosystem in the territory, and the increase of the cultural awareness of the neighbourhood on energy poverty.

Analysis of the most suitable participatory decision-making approaches in the context of energy poverty

The energy community wants to be an entity that can represent the social tissue of the territory in which it operates. Because of this, it is crucial to ensure and facilitate access to any interested person, and to promote the participation of less



visible social groups; only this can ensure that the EC reflects the composition of the neighbourhood, and that it represents it.

Many obstacles are present, preventing the active participation of people in a situation of vulnerability and energy poverty:

- **Lack of knowledge and proactivity:** one of the main barriers is that people suffering energy poverty are often not aware of the options available in the neighbourhood, such as participation in the energy community. Because of other imminent priorities, given by the vulnerability condition in which they live, there is no opportunity to know about these initiatives or to explore and get in touch with them. Usually, these social groups have no time available, and so they cannot actively look for information, research about these projects, or connect with them to know more about the existing options.

To overcome these issues, collaboration with other neighborhood entities working to alleviate vulnerability and energy poverty is crucial. These entities are in direct contact with these groups, having a thorough vision of their needs, priorities, and interests. They could convey the information to these people, taking advantage of existing channels, trust, and relationships to strengthen the link between the EC and the local needs, in a quick and effective way.

The EC communication strategy also plays a crucial role in this sense: a direct, simple, and tailored communication style has to be adopted to convey messages and information to these groups, in an immediate and clear way. The communication style, as well as the graphic image, needs to be inclusive, welcoming, non-discriminatory, and sensitive to potentially delicate topics.

- **Lack of trust in the energy sector:** historically, the energy sector has always been a “black box”, composed of a very complex interaction of actors, driven by economic and power drivers, and completely disconnected from the local territory and final users’ needs. People often get defrauded, end up paying more than expected, and get no transparent information about processes. When presenting the energy community, people often distrust the project because they automatically associate energy initiatives with an interest in economic benefits. CELB could see this, for example, while presenting its activities to some target groups (such as elderly people).

This barrier can only be overcome with time and effort by the community members. CELB is working to be present in the cultural and social life of the neighbourhood of La Bordeta, Sants, Hostafrancs, Poble Sec and the other local areas where it operates; being present in the events organized by civil society is crucial to demonstrate that the area of influence is the real life of the neighbourhood, and to show that the energy project is developed and implemented by people and aimed to people. Deepening alliances with local entities and initiatives is also crucial to keep strengthening the network with other activists and to achieve a more intense capillarity. Many collaborations with universities are also under development to ensure a structured and long-term strategy that starts with



students and research institutions. If historically trusted entities support and promote the project, it makes it more likely that people will also do it. In any case, this is a process that needs time, a lot of effort and presence.

- **Lack of economic resources:** people living in a vulnerable situation usually do not have the economic resources to join (or to think about joining) a community-based project such as the EC. Other priorities also make the interest in it secondary, and they usually end up distancing themselves from it. Joining CELB and participating in its services, such as the collective self-consumption scheme, involves a social capital contribution and regular contributions to the cooperative that many members cannot pay. In order to include vulnerable collectives and alleviate energy poverty, these economic obstacles need to be broken.

CELB is working on this and has created the Solidarity Fund, an internal tool that self-nourishes that can be used to cover these costs, ensuring the free participation of vulnerable collectives (more details will be reported in the following sections). This tool will be available for interested people, for short periods or long-term, and the criteria for the prioritization of the requests are under analysis. A transparent process needs to be ensured to make sure the trust is respected, and an anonymization protocol is to be implemented to ensure that these members will not suffer stigma, and that they have exactly the same rights as other members.

- **Lack of time and family balance:** people in more vulnerable situations also suffer from a lack of time availability. In fact, an active participation in the community project requires time and willingness to dedicate efforts to it, and this can prevent many people from joining the CE, since they are already full with their job(s), with other local activism, and with families (especially with young children). CELB circulated a poll to its members to understand which were the main constraints they had while participating. The main issues include, for example, the family and participation balance.

One of the things the EC can do is to promote the participation of members with kids at the activities. For example, there is a member who is now participating in all the monthly meetings and in other activities with her 2 kids, and the group takes care of them collectively while discussing the EC topics. In other cases, online or hybrid meetings are also proposed instead of in-person ones, to give the option to people with kids or who work until late in faraway places to join the meetings while managing their day-to-day life.

When the EC organizes events in the neighborhood, there is the option of having a kids' space managed by a professional cooperative dedicated to this, and sometimes specific activities for kids are proposed („contacontes" in Catalan, or storytelling activities designed for 3-10-year-old kids). We also created some videos for the community members for the communication campaign, and we ensured that there is always at least one person who can take care of the kids while recording.



In any case, CELB thinks it is important to also acknowledge the difficulty of joining all the meetings because of time constraints, and decided not to make participation obligatory, and not to link the participation to the Solidarity Fund to additional activities that could prevent people from applying for it. Each case is specific, and a personal evaluation is made to make sure that the participation can be optimized and that it is not too time-consuming for people. We also understand that time availability changes over time, and we care about people feeling comfortable in modifying their time dedication to the project depending on time availability in specific life periods.

- **Lack of knowledge on energy topics:** Energy topics can be complex to approach, and this can create a barrier that prevents people from joining an energy community and getting actively involved in its projects. This can create a distance between society and the community-based energy project. In addition, historical prejudices on gender roles, which are still highly rooted in our societies (in more or less evident manners), can replicate gender stereotypes that keep women and other more invisible and vulnerable groups far from these topics. One of the goals of the EC is to reverse these roles, approaching these groups to the energy sector and reducing the distance and the gender gap.

Several strategies can be combined to approach this obstacle. First of all, as already mentioned, the communication strategy of the EC has to include the dissemination of basic and simple concepts that make clear to potential targets what the projects are about. This breaks the first distance between people and energy topics, creating a first bridge that is necessary to break this knowledge gap and to make people feel involved. The communication has to be tailored to the target groups, and disseminated through specific channels (Instagram demonstrated to be very effective in the territory, and physical paper-based supports have to be distributed in the local hubs and entities that these social groups frequent).

In addition, specific training sessions for community members or neighbours can be designed and realized in the territory. These trainings will be held for free, in accessible spaces (public spaces, CELB offices, or in the offices of partner entities), and will be open to all interested people. The topics can focus either on EC activities (for example, on how the EC works) or on topics of interest (how to read an electricity bill, how the solidarity fund works, energy rights and popular movements for ensuring them, shared EV in La Bordeta...); these also include the projection of documentaries, or sessions organized with external experts. The EC decided to change the format of the monthly meetings to make it more interesting for members, defining monographic meetings focusing on specific topics, decided by all the EC members according to their interests and needs.



Selecting and reaching out to relevant stakeholders, event planning and engagement

Within CELB members, some local entities that have a wide outreach can be identified: La Borda and La Diversa (housing cooperatives, where some vulnerable families live), Batec (a cooperative expert in just energy transition), Lacol (an architects cooperative), AADAS (an association that gives free Assistance Women Sexually Aggressed), Energy Without Borders (an ONG working with environmental, social and justice topics), La Lleialtat Santsenca (an association managing a cultural centre, where many social and bottom-up initiatives takes place), l'Economat Social (a social shop with around 1000 members), between others. In addition, some members are active in neighborhood associations, that are organized in each street and are in charge of organizing popular events and activities that gather people living in each area of the neighborhood. These entities have a huge outreach in the territory, and are available to help CELB to spread information about the events it organizes, the news (for example, new energy available to be shared in the neighborhood) and other communications.

Local entities working with vulnerability

CELB is creating contacts with several entities working with vulnerable groups or with entities that can support the transformation that the EC wants to promote in the neighborhood. Each entity listed hereafter already has a contact person in charge of contacting the energy community, and the communications will be made through these persons. In addition, social networks (especially Instagram, which is highly effective in this territory) will be used to reach more people and invite them to the organized activities.

- **APE (alliance against energy poverty).** Contacts have already been made with this entity. Some meetings will be organized between CELB and APE, in order to identify potential collaborations. For example, CELB could provide support to APE in technical aspects needed to support vulnerable users who are having problems with their energy access, or APE could invite CELB to have a talk during some of their meetings. The details will be defined together (no date available yet)
- **Public libraries and community managed spaces:** some public activities are organized in public libraries, such as workshops on how to reduce energy costs and understand energy bills (library Vapor Vell and Francesc Candel, 19/11/2025 and 03/12/2025, and presentations to Ateneu de l'Hospitalet and Ateneu Les Corts, 04/02/2025 and 02/02/2026). More workshops will be organized in the following months. Other civic centers that will be contacted are Centre Cívic Cotxeres de Sants, Centre Cívic Casinet d'Hostafrancs, Centre Cívic la Magoria.
- **Impuls Cooperatiu de Sants:** CELB is a member of this entity, a network gathering entities active in the neighborhood of Sants, that gathers once per month and organizes trainings and workshops, events to be performed in the territory, and collective actions. The entities part of Impuls are active in several areas, such as antiracism, cultural transformation, support to vulnerable collectives, and so on.



- **Coòpolis, Cercle de Transició Ecosocial i Cercle d'Economies Feministes:** this is the entity promoting cooperativism and social and solidarity economy in Barcelona. Together with this entity, CELB organized events open to everybody in the neighborhood where energy topics and energy access are discussed, including visits to the PV plants. Several activities have been organized, some examples were the visits on 01/08/2025, 21/10/2025, 03/12/2025 (in collaboration with the municipality of Barcelona), 17/12/2025, 21/03/2025. More workshops will be organized in the following months.
- **Unitary Platform against Gender Violence:** CELB recently got in contact with this entity, and new future activities are under planning. CELB will participate in the *Forum against gender violence*, in Barcelona, between 4 and 6/11/2026. In addition, in autumn 2026, the entity will organize a meeting between CELB and a leader of women-led energy communities in Colombia, to share experiences and perspectives on how to lead the energy transition with a gender perspective approach (no date available yet).
- **Xera – discapacitat intel·lectual:** CELB collaborated with this association, which works with social groups with disabilities, with elderly and young people. A workshop has already been held, on 03/12/2024, with a group of elderly people, where the topics of energy access, energy poverty and energy communities were discussed. More activities are going to be realized in the future (no date available yet).
- **Fil a l'Agulla:** this entity specializes in group dynamics management and facilitation. Some calls and two meetings have been held between them and CELB, in order to identify potential needs that the energy community has with regard to inclusion, accessibility, promoting diversity and creating a welcoming space where everybody can feel comfortable to participate.

The entity explained the “three circles groups theory”, defining the different types of involvement and participation of members that every group has, and how to ensure mobility between the different groups (motor group, active members, participating members). A review of the participating dynamics was done, and a discussion on it and on how to deal with the identified need was performed. More workshops will be organized in the future, in order to continue the process while the EC members increase and to get to a conscious and mature group, able to ensure diversity within its members.

- **Other entities identified in the neighborhood,** will be contacted. Some examples, not limited to the list below, are:
 - o Almena Cooperativa Feminista: Addressing Gender violence and promotion of gender perspective; it can give to CELB tips on how to effectively integrate gender perspective actions in its DNA;
 - o Migress: entity working to fight against racism and to promote a real and just integration of migrants living in Barcelona, and working to



impact public policies and private sector processes with an antiracist perspective;

- APSOCECAT: association working with blind and deaf people, it would be interesting to hold a conversation with this type of entity to understand which social barriers that these users find we could address;
- Fundació Canpedró: they make available free meals to people suffering vulnerability, fighting against famine and unstable/unbalanced alimentation. Also in this case, the nexus between food and energy could be explored, finding solutions to provide energy to this initiative to support their work.

Energy Community Network and municipal strategy

In Barcelona there are around 12 energy communities existing in the different neighborhoods. They are coordinated in a network (Xarxa de Comunitats Energètiques de Barcelona), which gathers every 2 months and shares news, good practices, obstacles and available resources. This network is also taking a leading role in the just energy transition of the city, representing the needs of each territory, proposing common strategies and interacting/lobbying with the municipality as a unique representative.

In summer 2026, it published a document with 5 concrete proposals to integrate Energy Communities in the municipal energy and social services strategies, and to provide public reliable funds for energy communities and energy poverty alleviation actions. The proposals can be openly accessed at the “Document of proposals of the Barcelona Energy Communities Network addressed to the members of the Committee on Ecology, Urban Planning, Mobility and Housing of Barcelona City Council for the next electoral mandate”, available online here:

https://www.bcn.coop/wp-content/uploads/2026/06/20260615_Compromisos-AjBCN-Public.pdf

The network is currently holding meetings with the municipal technicians' representatives from all political parties, excluding the far-right ones, to discuss the proposals and lobby for their adoption in a short time (between 01 and 09/07/2026). The proposals are supported not only by the EC network but also by other entities in the city of Barcelona.

The collaboration with the Network of Energy Community of Barcelona also makes sure that strategies and good practices implemented by CELB can be replicated, adopted and adapted by each EC in its territory.



Universities

CELB is holding sessions and masterclasses for students (both from bachelor's and master's courses) of different universities in Barcelona. The universities engaged are:

- Urban Resilience for Sustainability Transitions (03-04/02/2025)
- Universitat de Barcelona (UB), master of environmental sociology (02/12/2025)
- Universitat Politècnica de Catalunya (UPC), environmental engineering, energy engineering and sustainability (05/12/2025, 11/03/2026).
 - o Bachelor/master thesis open calls on energy management in an energy community and gender perspective, energy poverty and community-based initiatives in the La Bordeta neighborhoods (2026/2027 course)
- Posgraduate programme in Social and Solidarity Economy (20/04/2026)
- Université de Lorraine, Decentralized Exergy Systems (30/06/2026)
- Coòpolis young programme JovESS, in collaboration with education entities (11/04/2025, 20-28/05/2025, 02/07/2026)
- Universitat Autònoma de Barcelona (UAB), Contemporary History, Politics and Economy, bachelor thesis of a student in collaboration with CELB: *„Energy vulnerability and networking in the neighbourhood: barriers and opportunities for the inclusion of vulnerable groups in the Bordeta Energy Community“* (2026 course).

The goal of these collaborations is to create alliances between education centers, students and the energy community, to create a network able to engage young people, professionals of the energy sectors and the local neighborhood. Classes have been and will be held in the universities, including visits to the PV installations. Thesis opportunities have been opened, allowing students to work with the energy community on specific topics.

In the first semester of 2026, a thesis on energy vulnerability and community network to address these issues was realized by a student of UAB, in collaboration with CELB: the student analysed existing barriers and created and explored links between the EC and local entities operating with vulnerability in the neighborhood.

These alliances, in the long term, can also promote the cultural change needed to take into account social aspects in the technical energy projects promoted by future technical experts.

Municipal bodies



- **Local PAE and the Social Rights department:** the PAE¹¹ (Energy Advisement Points) provides support to citizens in a situation of vulnerability, helping them to understand energy topics, whether they can save money by changing their energy contract, and if they can access some available discount, bonus, or special certificate. They also support these people in the processes to request these bonuses, which are usually complex. The Social Rights department from the municipality is the public department in charge of ensuring social services to the social groups in vulnerable situations. CELB and these two entities started a collaboration, and held some meetings in order to understand how their activities could be integrated (meetings on 08/09/2025, 30/10/2025, and email coordination). The PAE is proposing to its users to join the energy community and to apply to the Solidarity Fund options. In addition, more activities could be organized in late 2026/2027 in the PAE offices (no dates available yet).
- **Barcelona Energy Agency (AEB):** a long-term collaboration with this agency has been set, also thanks to the participation in the Network of Energy Communities in Barcelona. This agency is providing the necessary information to CELB on specific topics, especially on how the administrative obstacles can be overcome when implementing innovative processes, and meetings are held when requested, either between AEB and CELB, or AEB and the network.

Other activities

CELB organizes other activities and events to increase the energy literacy of people in the neighbourhood, especially the vulnerable ones who are the ones who would benefit more about it.

- **Energy Right Working Group:** the EC has an internal Working Group focused on Energy Rights (Grup de Treball de Drets Energètics), composed of some members of the EC. The working group has been the one that promoted the realization of the energy poverty diagnostic, which decided to create the Solidarity Fund and how it was structured, and is currently defining criteria and prioritization protocol for the long-term implementation (more details will be described in the next sections). It also took the initiative of contacting some of the entities listed above, and organizing some of the workshops/meetings. In the future, it has an interest in being a resource available for supporting vulnerable people interested in getting some support (practical or emotional) with regard to energy topics, and in proposing new services to the entities CELB is collaborating with (for example, to support the PAE with some of its tasks).
- **CELB Energy Desk and Energy Snaks (*Berenars Informatius*):** CELB opened an Energy Desk, an assistance point where one person from the EC is available to attend members, interested or curious people, replying to

¹¹ <https://ajuntament.barcelona.cat/serveissocials/ca/content/punts-dassessorament-energetic>



questions, doubts, and helping users who need technical support or advice. This Desk is currently open on Tuesday mornings and Thursday afternoons and evenings. Meetings can be in-person (at the CELB office) or online-phone calls, depending on the user's needs. The Desk was opened in mid-April 2026, it can be booked beforehand, and in 3 months, it attended 8 users.

In addition to this, a new phone line was made available to interested people, who can also call at other time slots to solve doubts; in this case, around 20 users used this service.

Another info point that was launched to welcome new interested people is the "Energy Snaks" (*Berenars informatius* in Catalan). These are inclusive events, where interested people or new members can join to get to know their neighbours, get information about the energy community and its projects and solve doubts. CELB organizes these events at its premises, and makes food, drinks and fruit available. Families and kids are welcome to these spaces, and the energy community takes care collectively of the kids participating while getting to know each other. These events were organized on 13/03/2025, 19/02/2026 and 28/05/2026, and CELB plans to organize more in the future in key periods (for example, after summer break, before Christmas break, in spring and before summer break).

- **Internal trainings:** CELB decided to organize some internal trainings on energy communities and its services, where new (and non-new) members can get more comfortable with the entity's history, the participatory processes and all the services offered. This training format was started in December 2024, where a session was held and recorded, and specific material was shared with the members. From then on, new material has been created and integrated into the shared one, and new training sessions will be organized. In addition, a training session was organized on the energy consumption topic, discussing tips to adapt behaviour to the fact of participating in energy collective self-consumption (29/05/2025).

In June 2025, the monthly meeting was dedicated to a training on energy poverty, and the energy poverty diagnostic was presented to the members.

In the future, more training will be held according to the identified interest and necessity.

- **Energy Communities for Energy Rights:** CELB created a network of entities interested in fighting energy poverty and integrating a gender perspective in the energy sector: a first meeting of this network, gathering more than 20 entities from the energy sector, municipal services, feminist movements, and the third sector, was held on 30/01/2026. The goal of this network is to create connections between entities working with different perspectives and on different topics, that could collaborate to improve the gender balance in participation in energy initiatives and reduce energy poverty. All the participating entities demonstrated a high interest and commitment to the topic. The next step is to invite all them to the training cycles that will be organized in autumn 2026 within the GENDER4POWER



project, and to take advantage of the already existing available knowledge identified, which can be shared with the other entities.

- **Popular celebrations:** CELB wants to be an actor with a strong presence in the popular and cultural life of the neighbourhood. This has the double benefit of achieving more social groups, and thus increasing the CE diversity, and to get a better cohesion of the team, thanks to activities “in the street”, with diverse tasks and that call on everybody. Because of this, CELB is participating in activities such as the Festa Major of the neighbourhoods where it operates (Sants, La Bordeta, Hostafrancs...), namely the annual celebration where all the inhabitants of a territory organize activities and celebrate together their neighbourhood. In addition, CELB participates to other types of local popular traditional events such as “Calçotades”, “Carxofades”, popular lunches organized in the squares or streets where everybody is welcome and with popular prices, or to local markets where entities have their stands on the streets (such as Fira Entitats de Sants, held every may in Sants, and Primavera Cooperativa, an event launched in May 2026 to promote cooperatives). CELB also started to celebrate achievements such as the entity's birthday or a certain number of members (the first 100, 150 members...) with celebrations open to everybody and with events to promote the entity in an alternative way.

Structuring the activities and planning the engagement events

The following activities will take place in the collaborative process:

Event	Objective of the event	Who to invite and channel	When and where	Who organises
Workshop to understand and reduce energy bills	Energy literacy, energy and cost reductions	EC members, vulnerable families, EC partners. Emails, specific invitations, social networks, flyers	19/11/2025, 03/12/2025, 04/02/2025, 02/02/2026, Autumn 2026 and 2027 Civic centers and local libraries	CELB
Energy Community visit	Presenting the EC projects and visiting the PV panels	All social actors, direct invitation by mail, social networks, flyers	01/08/2025, 21/10/2025, 03/12/2025, 17/12/2025, 21/03/2025, Autumn 2026 and 2027. CELB PV installations.	CELB , Coòpolis



Meeting with women-led energy communities in Colombia	Knowing each other's activities and creating a collaboration in terms of women's leadership	EC members and leaders, Unitary Platform against Gender Violence. Emails	November 2026. CELB office.	CELB, Unitary Platform against Gender Violence
Meeting with Alliance Against energy Poverty (APE)	Exchange potential collaboration	EC and APE representatives. Email	Autumn 2026 CELB office	CELB
Aeemblies of the Impuls Cooperatiu de Sant	Create network with local cooperatives promoting social projects in the neighborhood	EC members, other local cooepratives	Once per month. Impuls's office.	Impuls Cooperatiu de Sant
Meeting with the foundation and practical activities with its members.	Presenting EC activities to target groups (such as elderly people)	Xera – discapacitat intel·lectual representative and members, EC members	03/12/2024 Late 2026 or beginning 2027. Foundation office.	CELB
Group dynamics sessions, CELB analysis.	Co-design the events with households, collaborate in community design	Fil a l'Agulla, EC representatives. Emails, phone calls.	08/05/2026 15/05/2026 19/06/2026 Potential future meetings in late 2026. Online meetings.	CELB
Meetings with the Barcelona EC Network	Coordination within energy communities, definition of common strategies and political lobby	All EC in Barcelona. Emails.	Every 2 months, in the office of an EC.	Coòpolis
Meetings with political parties	Presenting the proposal to the	EC representatives, technical	July 2026	Network of EC in Barcelona



representatives in Barcelona	municipal energy and energy poverty strategy to all political parties	representatives of political parties. Emails.		
Master classes in universities	Knowledge and sensitivity training to university environment.	Students, researchers and professors. Emails.	03-04/02/2025 02/12/2025 05/12/2025, 11/03/2026 20/04/2026 30/06/2026 11/04/2025, 20- 28/05/2025, 02/07/2026 Late 2026 and 2027. University, or CELB office.	CELB and several local universities .
Coordination within EC and local PAE	Creating a long-term collaboration to involve vulnerable families.	Local PAE, Social Rights department, EC representatives. Emails.	08/09/2025, 30/10/2025, late 2026/2027. CELB office.	CELB
Energy Rights WG meetings	Develop energy right projects, designing and operating the Solidarity Fund, proposing new projects and collaborations .	EC members. Emails, in-person meetings.	Once per month, CELB office.	CELB
CELB Energy Desk	Open point, to assist EC members, or interested people.	EC members, local people, other EC representatives ... Newsletters, emails, social networks.	Weekly, on Tuesday mornings, Thursday afternoons and evenings, from mid-April 2026. CELB office.	CELB



Energy Snacks	Get to know the community, solve doubts, get in touch with the project.	EC members, local people, other EC representatives ... Newsletters, emails, social networks.	13/03/2025, 19/02/2026, 28/05/2026 Late 2026/2027. CELB Offices	CELB
Internal trainings	Strengthen CE members skills and knowledge on specific topics.	EC members. Emails, newsletters.	December 2024 May 2025 June 2025 More to be organized. CELB office.	CELB
Energy sector network	Create alliances within energy sector experts, ECs, people working with vulnerability and energy poverty, and with feminist approach	Local ecosystem in the areas of energy, vulnerability, gender perspective, popular initiatives... Emails, social networks.	30/01/2026 Autumn 2026, 2027. CELB office.	CELB, ESF
Popular celebrations	Promote the EC activities in popular and cultural contexts	EC members, people from the neighborhood. Emails, social networks	All over the year. February/March : cartxofades/ calçotades March 21st: CELB anniversary May: entities fairs Summer: Festa Major (neighborhood celebration)	Popular entities

Organizing the necessary materials and tools

Materials needed are, for all the proposed activities, a PC for taking notes and, in case of workshops, sticky notes and pens.



For the events in the street, CELB will use the Econowatt, a wooden structure built by the EC members equipped with wheels, a small PV panel and a space for tailored flyers. It also has an electronic system that connects a battery to the PV panel, where a microphone or a speaker can be powered. Music and playlists will also be needed during the events.

For the energy snacks, the celebrations and some “special” monthly meetings, such as the Christmas and summer ones, snacks, fruit and juices will be provided.

Facilitating the collaborative sessions and documenting outcomes

The meeting and activities will be organized and facilitated by CELB, who will plan in advance the agenda of the meeting and make sure all the topics are covered. The facilitation skills of the people of CELB are going to be strengthened thanks to the collaboration with Fi a l’Agulla, the facilitation entity with which CELB already had meetings and that is considering becoming a member of the energy community. A safe and respectful space will always be created, and all the participants will be made comfortable to express their opinions and needs. After the meetings, a notes summary will be prepared and shared by email when useful; participants will be asked to integrate the notes and to share additional material they might have.

Challenges can be, for example, the difficulty of getting to concrete proposals and conclusions after meetings; in this sense, CELB will take the role of facilitator to convey the conversation towards practical outcomes.

Guidelines for replications in other contexts

This process demonstrated that the energy sector is very fragmented, and many actors are involved in parallel, similar activities, but with no interactions between them. It also showed that, nevertheless, the interest in collaborating with other entities working with close topics is high, and that the willingness to create strong connections and collaborations is significant. Because of this, the connection role CELB is assuming, promoting contacts, meetings and new common strategies to tackle energy poverty with a gender perspective, is highly important in detecting and addressing this existing interest.

This network that is being created at the local level is fundamental to ensure a welcoming, organized and inclusive context where people suffering vulnerabilities and energy poverty can feel in a safe, useful and comfortable space.

Because of this, the efforts made by CELB and other entities can be replicated; for example, at the city level, it can be done through the energy community networks, by sharing successful experiences, approaches and types of alliances. In any case, these need to be tailored and adapted to each territory's characteristics, which are significantly different between neighbours, and considering the existing local entities.



Through the EC network, the new strategies that are under development (contacts with the municipal technical staff, with PAE, with the Energy Poverty Alliance, and universities) could be replicated in all the neighbourhoods with a common approach.

In the long term, these strategies can ensure that the EC activities get more trust and support from public opinion, thanks to alliances with solid and trusted entities, such as universities and public bodies.

Public fundings to the EC activities for tackling energy poverty would also help the successful implementation of these projects, if available.

The process of co-design of the rehabilitation of la Diversa building, explained in the “Renovation intervention feasibility main project” section of the last chapter, represents another important lesson for the participation processes in the decision-making. In fact, specific sessions were organized with the users to propose and discuss the project ambition, costs, and financing scheme: the space was inclusive and everybody’s opinion was requested and valued, participants were asked to share their doubts and uncertainties, especially families with lower economic means. The project was actually reduced and adapted to their possibilities, making the participants feel part of the process.



Strategy on financial schemes

In this section, the focus is on building renovation. CELB is in the process of designing and proposing the RaaS – Rehabilitation as a Service.

Brief overview of the strategy's purpose

The purpose is the co-creation of new rehabilitation models rooted in social innovation, where energy communities are a key actor able to facilitate access to financing, technical support and community empowerment dynamics for multifamily ancient buildings that need to be renovated.

Challenges faced by demonstrators in accessing finance

No direct funds to support energy communities that want to include vulnerable collectives in their services, difficult to collaborate with public authorities.

- Collective self-consumption:

Funding to EC for investing in PV requires a certain % of energy generated to be dedicated to vulnerable groups, but no funds are dedicated to this, so the EC has to take charge of this support (Proyectos Innovadores¹²).

Other funds are dedicated to service and strengthen ECs, but cannot be directly used to cover the participation cost of vulnerable groups to the EC (Solarcoop¹³, Convocatòria General de Subvencions de l'Ajuntament de Barcelona¹⁴, Enfortim l'ESS¹⁵, ...).

- Refurbishment:

Some fundings are available for the refurbishment of old buildings, both at the local (municipal^{16,17}) and EU (NextGeneration¹⁸) level, not specifically for energy communities.

Nevertheless, it is not easy for people to access them; first of all, because the process is complex, and detailed technical renovation projects are required to

¹² <https://sede.idae.gob.es/tramites-servicios/programa-de-incentivos-de-proyectos-innovadores-de-energias-renovables-y>

¹³ <https://icaen.gencat.cat/ca/energia/ajuts/comunitats-energetiques/solarcoop/>

¹⁴ <https://ajuntament.barcelona.cat/ca/informacio-administrativa/subvencions/convocatoria-general-de-subvencions-projectes-activitats-i-serveis-de-districte-i-de-ciutat-lany-2026>

¹⁵ <https://ajuntament.barcelona.cat/ca/informacio-administrativa/subvencions/subvencions-de-lajuntament-de-barcelona-lenfortiment-de-leconomia-social-i-solidaria-i-la-intercooperacio-en-lestrategia-essbcn2030-enfortim-less-2026>

¹⁶ <https://ajuntament.barcelona.cat/paisatgeurbacat/rehabilitacio-i-restauracio/ajuts-la-rehabilitacio/ajuts-les-parets-mitgeres>

¹⁷ <https://ajuntament.barcelona.cat/paisatgeurbacat/ajuts-cobertes-verdes-i-naturalitzacio>

¹⁸ https://tramits.gencat.cat/ca/tramits/tramits-temes/22763-Next_generation



apply for funds, which citizens can rarely do on their own. In addition, these fundings are highly competitive and only cover part of the renovation costs, which are significant. Therefore, usually this type of support needs to be complemented with loans from financial institutions. In order to get loans, people need to be able to provide guarantees; this often keeps vulnerable groups out of this opportunity, making access to financing only possible to households and groups with mid-high economic conditions. This is especially noticeable for low-income households, especially single women, monoparenting families, migrants, and people with disabilities. For example, a housing cooperative where most of the members are families in vulnerability (low-income families), was not able to commit to requesting the needed loan from a bank because of uncertainty in the future and high amounts of money.

In this context, Energy Communities could be a crucial actor that enables the participation in the renovation process of vulnerabilized groups, who are the ones who mostly suffer from poor housing conditions and low energy efficiency. In fact, the EC can be the entity that takes care of preparing the technical project, applying for funding and loans, being a solid and reliable entity, and transferring them to the final users, namely its members. Nevertheless, it was assessed that, in Barcelona's context, the regulation does not allow the EC to represent the buildings to be renovated.

Financial landscape analysis

The Spanish Ministry of Housing and Urban Agenda (Ministerio de Vivienda y Agenda Urbana del Gobierno de España) sets a funds programme available in the whole Spanish territory, from EU NextGeneration funds; nevertheless, the allocation of the funds is managed by each region (autonomous communities).

There are four main available programmes¹⁹:

- «*Programme 1: funds for rehabilitation at the neighbourhood level*». It is aimed at municipalities that want to promote the renovation of buildings in areas with high vulnerability.
- «*Programme 3: funds for building renovation actions*». It is aimed at building owners (mono or multi-apartment) who want to renovate common elements of their buildings to improve energy efficiency and savings.
- «*Programme 4: funds for energy efficiency improvements in households*». It is aimed at building owners and people who live in the interested buildings (who are officially domiciled there) and are interested in implementing measures to improve energy efficiency.
- «*Programme 5: funds for the preparation of the "building book", or rehabilitation project, for a building*». It is aimed at owners of buildings built before 2000.

¹⁹ https://tramits.gencat.cat/ca/tramits/tramits-temes/22763-Next_generation



«Programme 2» is not considered a renovation programme, since it is aimed at supporting rehab offices.

These funds are the same for all the Catalan territory, but depending on the area where they are implemented, different actors manage these funds: in case the renovation is based in Barcelona city, the entity in charge of it is the "Consorti de l'Habitatge de Barcelona"; if it is based in the Barcelona metropolitan area, the "Consorti Metropolità de l'Habitatge"; if in other areas of Catalunya, the "Agència de l'Habitatge de Catalunya". This fragmentation makes the interaction with the correct entity, and thus the actual access to the funds, more complex, especially for non-expert users. A one-stop shop centralizing the information, processes and implementation of the project is not available; such a service would be extremely useful to support users in their process of understanding existing opportunities and actually applying for funds, since with the current situation, many individual users, especially if in a more vulnerable situation, might find it too complex and not start the process.

In addition to the mentioned ones, some municipalities can decide to integrate those programmes with complementary ones. For example, in Barcelona there are two main specific programmes:

- Fund complementary to Programme 4, which can duplicate the maximum fund budget for projects in this programme.
- Funds for implementing green rooftops and renovation of party walls for thermal insulation.

For what concerns vulnerable families interested in renovating their households are concerned, each programme provides a different framework. For Programmes 1 and 3, the funding can cover up to 100% of the costs; nevertheless, these funds are strictly related to the building property, and the money might be returned if a titularity change occurs, or after 90 years. This prevents the actual use of this opportunity.

Programmes 4 and 5 do not include additional criteria for vulnerable families, even though the funding of Programme 5 can cover almost the entire cost of the projects.

Moreover, some tax advantages are designed to recover part of the investments in renovation/energy efficiency. Deductions between 20% and 60% are available depending on the measures and on the energy consumption reduction achieved through the projects implemented. This is not really boosting the participation to vulnerable families; in fact, in the Spanish territory, the tax declaration is only needed for total annual incomes from 22.000 €. Families in economic vulnerability have significantly lower average incomes; therefore, they have no benefit from this measure.

Gender perspective and participation of women and other more vulnerable social groups are not included in the criteria for conceding these funds.

In addition to public funding, people can also ask for loans from bank entities in order to implement their projects. Conventional banks usually request several



guarantees for approving a loan, which in many cases, individual users, especially if with a mid-low income or in other vulnerable situations, cannot ensure.

In the territory, there are some ethical finance institutions; the main ones are Coop57, Institut Català de Finances (ICF), and Fiare Banca Etica. These entities are more willing to support local, ethical projects, especially if community-led initiatives.

The combination of public funding and ethical loans is a winning strategy for the implementation of these projects. In any case, some issues still represent an important barrier: the complexity of understanding the funding panorama, the technical projects that are needed to apply for the funds, and the bureaucratic process of the applications. These processes require skills that make the application of individual users rare and complex.

Criteria for selecting suitable financing scheme(s) and selection of best suitable financial scheme(s)

The described framework shows how the financing availability in the territory includes three main types of barriers for users: lack of technical knowledge, cofinancing, and administrative complexity.

Because of this, CELB is working to develop a new strategy to centralize these processes and facilitate the participation of residential users, especially vulnerable families and women, in the building renovation goals.

The scheme is based on the idea that an energy community can represent a new actor in this framework, providing a new service of rehabilitation. Currently, the existing regulation does not recognize energy communities as such an actor, able to canalize public funds and to support and facilitate the process. Therefore, CELB wants to be a one-stop shop specialized in rehabilitation processes, with a specific focus on community-led initiatives based on codesign of all participants, especially taking into account the needs and possibilities of vulnerable families.

The scheme is a hybrid format, where three main financing sources are combined: public funding, a loan from an ethical institution, and a part of investment from the final beneficiaries. The EC can centralize this, applying to the funds and loans.

The example of La Diversa, previously described, defines some of the guidelines of this process. In fact, CELB took care of the technical project, preparing an initial proposal of measures that could improve the energy efficiency of the building. Then, an iterative process or the collective definition of the project was started: the final users were mobilized, in several specific meetings, where the proposal was explicated and inputs were collected. The inputs included concrete needs (identified problems in the apartments that need to be fixed), priorities of each family, and budget. In fact, the first technical project presented was ambitious, but the final users agreed that the part of the investments they had to do was out of their budget; therefore, the project has been scaled down according to the inputs collected, discussed in the focus groups and finally confirmed by the whole group.



The focus group sessions were inclusive spaces where all beneficiaries were invited and could express their opinion; an option is that an anonymous box is made available to the group, in order to allow people to express their concerns in a safe way. In any case, the most important strategy to avoid stigma is the creation of a safe space built on trust, where all opinions are respected and welcome.

Action plan for testing the selected financial scheme

EC should be able to coordinate the different actors involved, mobilizing economic and technical resources, generating trust among the residents and facilitating the implementation of energy improvement projects at the neighbourhood and building scale. A unique community *one-step shop* that complements municipal services, to accelerate the decarbonization of the built park and improve the living conditions of the neighbours.

As mentioned, CELB already tried to implement this financing scheme, but a concrete obstacle did not allow it to achieve the financing: the energy community was not recognized as a legitimate representative of La Diversa, although it had the permission to represent it and the building is strictly connected with the EC.

Therefore, the next step for testing the scheme is to do it in a **regulatory sandbox**, namely a specific context where innovative projects can be implemented out of regulation, being able to test some products or processes that usually are not allowed to explore how they work in a real environment, or how they affect it and how they should be improved to correctly work.

In this sense, as a first step, a formal request will be made to activate the sandbox.

In parallel, CELB will dynamize the beneficiaries, organizing sessions to update the technical project and reaffirm the availability of the final users, confirming or renewing all the details, achieving a new participatory technical project. This will take around 4 months.

Successively, once the final project is confirmed, the new financial scheme of the Renovation as a Service (RaaS) will be explored. It will also be codesigned, validated and tested by putting together all the financial actors of this system: the ethical bank, the Catalan institute for financing (ICF), or other potential private/public financing. This is the innovative aspect of the project, where the EC will represent the building for the financing of the renovation project, and will be done out of the existing regulations. This step will take around 6 months.

A crucial task of this project will be the review of the whole service from a juridical, administrative and financial perspective. The current regulations will be reviewed and potential improvements will be proposed for the administrative processes and for the public financing schemes.

Finally, there will be a step where the results will be analysed and evaluated, systematizing the process and creating a real model that can be replicated and



adopted by other entities. This process will take around 4 months and will start in parallel with the financial one.

The assessment of each stage will include indicators such as:

- Percentage of users actually participating in the codesign meetings
- Percentage of women representing their household
- Number of credit institutions willing to collaborate with the CE
- Openness of the public authorities to collaboration

Feedback will also be collected from the beneficiaries, in order to understand the needs, concerns and reactions to the work realized.

The risks of this project include, in the economic aspects, the difficulty to achieve the commitment of financial entities. In this case, the fact of proposing the project as a CELB provides more trust in entities, since long term collaborations are already ongoing and CELB has demonstrated to be a trustworthy project, supported by the local community and local entities.

With regard to the public authorities, the same type of risk could be present. In this case, the support of other entities is crucial: for example, BATEC, a cooperative active in Catalonia for the boost of just energy transition, and Lacol, an architecture cooperative specialized in sustainable buildings that will be responsible for the technical renovation aspects; in addition, the participation in the LIFE project GENDER4POWER also gives strength and trust to the proposal.

Finally, as far as the social perspective, the risk is that the final beneficiaries will not be as motivated as in the first period of the project implementation (2025), because of the long times and disillusionment. In this case, CELB will make sure it explains the process to all users, adapting to their needs (place, time, family priorities...) and personalizing the explanation to each participant. Transparency will be crucial in all steps of the process, making sure that expectations are always coherent with the possibilities of the project and that each modification to the initial plan is clearly shared with the participants.

Policy Recommendations and replication guidelines

The proposal is based on the application of a regulatory sandbox. Therefore, the goal of the strategy itself is to define a set of proposals to enable the implementation of the Rehabilitation as a Service offered by energy communities. The main aspect to be studied will be the possibility of the energy community to represent a user interested in renovating a building/house, both in terms of the application to public funding and the request for loans to financial entities.

The energy community would facilitate the participation of all users in the renovation process, and especially of vulnerable ones. Being a community project with strong social objectives, the ECs will also implement mechanisms to ensure that more invisible social groups can access the services, which will be available to all its members. A special effort will be dedicated to women-led families, by



empowering women on these topics and providing them support while realizing all the steps, also providing family-friendly spaces where kids are welcome.

The service, once tested, will be shared with other ECs, through the Network of Energy Communities of Barcelona and the other networks of ECs in the territory.

Strategy on addressing social challenges for energy poverty alleviation

Introduction and objectives

Overcome socioeconomic barriers, allowing people in vulnerabilized situations, and especially those suffering energy poverty, to access the energy community and its services.

Outline of key social challenges linked to energy poverty

Energy poverty is a widespread problem, strictly linked with structural inequalities and other vulnerability issues.

In the study "*Precarietat energètica i infància a la ciutat de Barcelona Una mirada des dels drets energètics de la infància*"²⁰, the impact of energy poverty on **children and young people** is analysed.

In Barcelona, 15% of households with children cannot maintain an adequate temperature at home during winter, with peaks up to 35% in low-income neighbourhoods (25,4% in Sants-Montjuïc district, where La Bordeta is located).

In Sants-Montjuïc, 16,4% of households with children have delays in paying basic supply bills (electricity, gas or water), while in some districts this percentage can be up to 25%.

The study also assesses the impact of energy poverty on health issues: in fact, non-adequate energy supply and thermal comfort at home involve a higher frequency, intensity and duration of respiratory illnesses, such as asthma and bronchitis, and alimentary and nutritional issues. Moreover, these health issues also involve school problems, since the absenteeism causes delays in learning and in scholastic performances, and thus, in their future career opportunities. In addition, energy resources limitation makes it difficult or impossible to complete all homework.

Adolescence appears to be the most affected age because of stress, guilt, stigma and personal hygiene. It was studied that young people living in energy precarity have a 5 times higher probability of developing mental health issues.

²⁰<https://esf-cat.org/blog/2020/05/07/precarietat-energetica-amenaca-drets-dels-infants-barcelona/>



In its study "*Radiografies de la situació del dret a l'habitatge, la pobresa energètica i el seu impacte en la salut a Barcelona*"²¹, Engineers Without Borders interviewed families in Barcelona with **housing problems** to assess the link between housing, energy poverty, and health issues. The survey showed that 48% of the people replying live in an energy poverty situation (a significantly higher percentage compared with the general statistics, around 10%).

56% of the interviewed confirm that they had to delay the payment of basic supplies: 44% with electricity bills, 28% with gas bills, and 29% with water bills. This situation is usually not a one-time issue, since for 73% of them this happened three or more times, and 38% of the interviewed have irregular access to these essential services. This is strictly connected with the right to a safe home: 73% of these persons live in irregular housing conditions.

Around 42% of these families live in houses with water leaks, dampness in walls, floor, ceiling, or foundations, or rotting of floor, window frames or doors.

Another factor strictly related to energy poverty is **gender inequality**. In the study "*Desigualtat de gènere i pobresa energètica Un factor de risc oblidat*"²², the impact of gender on structural energy poverty in Barcelona is deeply analyzed, building on the results obtained from the previously mentioned surveys and complementary analysis.

In fact, women appear to be one of the groups mostly affected by energy poverty: they represent 78% of the interviewed who cannot ensure an adequate temperature in winter, and 69% of the ones who had to delay basic services bill payments.

The study presents the risk of poverty rate indicator disaggregated by gender in Catalonia, which in 2025 was 18.9% for men and 19% for women, with a negligible gender impact. Nevertheless, it proposes a new indicator to evaluate the risk of energy poverty, developed by the Chair of Social Inclusion of Rovira i Virgili University, that takes into account individual income, to consider what happens within a household, not assuming that all members have the same living conditions and degree of control over them. In this case, the obtained risk of poverty rate is significantly impacted by gender: 25.7% for men and up to 49.7% for women.

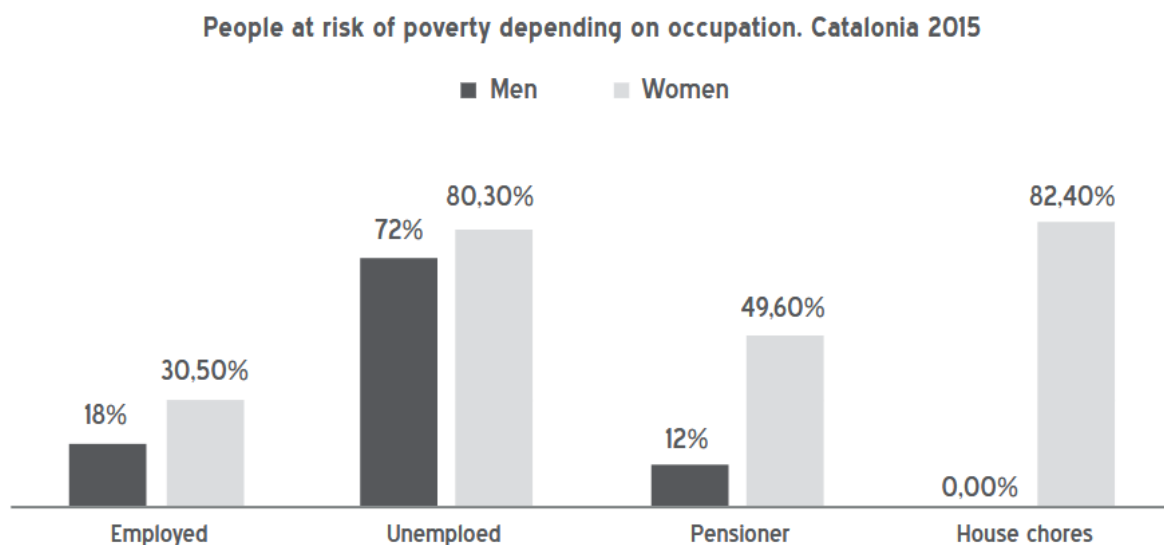
The patriarchal division of gender roles gives women responsibility for addressing energy poverty. Therefore, they are the ones who mostly manage, fight, search for solutions and suffer the most direct consequences of it. Other factors affecting the energy gender gap in energy poverty are the strong presence of single-parent households affected by the absence of equality policies for reconciliation, the gender wage gap, worse conditions of access to the labour market and insufficient benefits, as well as unequal distribution of roles in the household.

²¹<https://esf-cat.org/wp-content/uploads/2018/04/Informe1-Radiografies-DretHabitatge-PobresaEnergetica-Salut-Barcelona-LQ.pdf>

²² <https://esf-cat.org/blog/2017/01/24/esferes17-desigualtat-genere-pobresa-energetica-factor-risc-oblidat/>



The energy poverty risk also depends on **age** and **occupation**: the image below shows how the gender gap varies depending on occupation.



During the interviews, topics such as tiredness, weakness, feeling helpless, fear, depression, guilt, defeat or suicide were repeated. The situation endured involves not only obvious economic problems but also family breakups and feelings of loneliness and exclusion.

Community profiling and vulnerability assessment

The EC has an internal working group of Energy Rights, which is working on these aspects and has developed surveys to be shared with the EC members and with the whole neighbourhood, with the objective to understand the actual situation and needs in the territory. The results showed that different factors can involve vulnerability and be linked to energy poverty. These include:

- **Socioeconomic conditions:** age, gender, type of household (family, monoparental, number of kids, number of people working), income, working stability, the share of incomes that need to be used to pay basic services such as rent and energy bills, number of people in charge of the family, potential vulnerabilities, disabilities and inabilities...;
- **Housing and energy conditions:** type of housing and its conditions, rent/ownership, available appliances and their age/efficiency, electrification rate of consumption, thermal comfort...;
- **Energy literacy:** understanding energy bills, awareness of potential savings, knowledge of existing mechanisms that could be requested (such as "social bonus");
- **Integration into the local community:** available networks, cultural and language barriers, gender discrimination, willingness to actively participate in community spaces...



This analysis emphasized how the concept of vulnerability is not univocal, and that a significant “hidden vulnerability” can be identified in people who do not recognize themselves as being in a situation of vulnerability.

It also showed that the EC members, on average, live in more advantaged conditions than the average in the neighbourhood, especially in terms of incomes, housing conditions and apartment tenancy. This confirmed the awareness that more effort should be put into making the energy community more accessible and diverse, to achieve for other social groups and to provide benefits where more are needed.

As regards gender aspects, it was noticed that, in general, the majority of people filling the polls identify as men (women are around 46% in the case of the open poll, and 48% for the EC members poll).

Tailor-made intervention design

Interventions: Creation of the Solidarity Fund, available to people interested in joining the EC who are in delicate situations. It covers the social capital payment of these people, and it allows them to receive electricity for free.

People can request the use of the Fund when joining the cooperative or when they need it, and an internal commission will evaluate the requests and allocate the available funding depending on a specific protocol under development.

Measures:

Short-term strategy

CELB created an internal fund, called the Solidarity Fund, to enable the participation in the cooperative and its projects for people in a vulnerable situation (structural or temporary).

The Fund is structured in two different parts, which can be used to cover two types of costs:

- **The social capital contribution** needed to join the cooperative and each specific service (such as the collective self-consumption or the collective e-mobility service). This contribution is to be made once, when joining the cooperative or at the beginning of the service, and is necessary to be part of the project. Covering this cost can be a useful support for people who feel they cannot invest a significant initial amount of money (300 euros) to join the project, even though recuperable if leaving the cooperative, thus removing an initial access barrier.
- **The annual fee**, to be paid when participating in the collective self-consumption scheme. In this case, the Funds allow people to receive this energy without any charge, reducing the total cost of the energy bills and alleviating the problems this can involve.



In a first phase (started in 2025), the Fund is currently operating in a “pilot phase”, with only 5 users benefitting of this opportunity and a feedback process ongoing, in order to finalise the Fund design.

This phase foresees the definition of a protocol for the request and assignment of the funds.

The Energy Rights WG is defining all the criteria that are considered important to determine energy poverty and vulnerability, and all the elements that can hurt this. According to this, it is developing a specific survey, building on the initial survey created to assess the energy conditions of the neighbourhood, to be filled out by the people requesting the Fund. The use of the Fund can be requested both by new potential members interested in joining the project and by people already participating in the project who are living a difficult period. In parallel, the WG is defining a protocol for the weighting of each criterion, and for the prioritization of the requests: this will be applied in case more requests than available Funds will be received, in order to follow an objective and structured process to determine the final beneficiaries of the support scheme.

Long-term strategy

In the long-term, two different strategies can be identified.

1. **Solidarity Fund long-term implementation:** in the long-term (from the end of 2026) the goal is to operationalise the implementation process of the Fund, opening the opportunity to request the use of the Fund and coherently assess the requests. This assessment will be based on a Fund request option on the website, which will only be received by the Energy Rights WG (and will be anonymous for the rest of the EC members), and will work by applying a model based on an automatic data assessment, together with a specific supervision of the WG.

The EC will work, in parallel, to continuously nourish the Fund through paid activities, workshops, master classes and other dissemination and training activities.

2. **Services to the neighbourhood:** once the economic support tool is available to facilitate the participation of vulnerable collectives to the EC, a parallel strategy will be to work to increase the presence of the EC in the territory. This means that the EC, and especially the Energy Rights WG, will work to provide expertise, knowledge and practical support to people suffering energy vulnerability. Crucial alliances will be strengthened with local entities operating in the territory, such as, for example:
 - PAEs (Points of Energy Assessment), Barcelona Energy Agency and Social Services, public entities working with energy and vulnerability;
 - APE (Energy Poverty Alliance), a community-based movement working to promote self-empowerment and knowledge of energy rights and to fight against energy poverty;



- Secretariat d'Entitats de Sants, Grup d'Habitatge de Sants, and other self-managed community-based coalitions to preserve basic rights in the neighbourhood;
- Fundació Xera and other foundations working with specific vulnerable groups (such as people with disabilities, elderly people...).

The goal is to provide some services in collaboration with these entities, to be able to reach more social groups and to propose useful, free services to the neighborhood; for example, a desk where people can pass to get basic knowledge on available public incentives/funds for energy and living conditions and other support schemes, and to support them while requesting them, or to understand how to read the bill. In addition, the EC will be available to organize specific workshops and thematic topics in the offices of these entities, to reach their users more effectively. The collaboration is also aimed at not duplicating efforts, since these entities already provide useful services to the population, but to integrate them with the EC knowledge and resources and to alleviate potential long implementation times.

This part of the strategy is not aimed at facilitating the participation of people in the EC, but to the opposite process, namely the more widespread and capillary presence of the EC in the cultural and social life of the territory.

As far as the communication strategy is concerned, it will be crucial, first of all, to make sure that all the communication actions (social media, flyers, messages, interviews, articles published...) are based on an inclusive and non-discriminating approach and permeated with a gender perspective, breaking existing (and hidden) stereotypes on vulnerability, gender, and support approaches. Also, the image and layout of the communication strategy will be carefully reviewed to make sure the messages shared are supported by the design style. The gender perspective will permeate all the communication actions.

Addressing administrative and regulatory barriers

Some public funds are now linking the designation of financing for PV panels to the fact that a certain percentage of the generated energy will be reserved for people in vulnerable situations²³. Nevertheless, the criteria to define vulnerability are the same ones that define who can receive other public support for energy bills (Bono social²⁴); this means that an Energy Community benefitting these funds is not free to identify the people who actually could need and benefit from this energy, since if they do not fulfil all the criteria, they do not fall into the definition. People who fulfil these criteria have access to the bono social public support, having important reductions in their energy bill. CELB is interested in assigning its

²³ <https://sede.idae.gob.es/tramites-servicios/programa-de-incentivos-de-proyectos-innovadores-de-energias-renovables-y>

²⁴ <https://www.miteco.gob.es/es/energia/pobreza-energetica/pe-001.html>



energy to people who cannot fulfil all these criteria and, thus, cannot receive the public funds, to address a non-protected population group that would need this support, not receiving additional public support, and considering additional aspects such as gender. Nevertheless, because of this obligation, CELB has to ensure a certain number of energy packages to these “officially recognized” participants, subtracting resources from the people identified through the tailored and territory-based research. Because of this, a proposal would be to revise the criteria set at the national projects (Proyectos Innovadores), opening up to the differences and specific needs that energy communities identify (and can justify) in their territory.

Another important topic is that, currently, the regulation does not recognize energy communities as actors able to promote local innovation processes by representing their members when promoting renovation processes. A needed change would be to recognise the energy communities' ability to apply for funds, promoting and leading a project in the name of a group of citizens, for example, living in the building that needs to be renovated.

Monitoring, evaluation, and adaptation

- Number of people participating in the CELB through the Solidarity Fund;
- Percentage of women participating in the CELB through the Solidarity Fund;
- Every year, the people joining through this programme will have to fill the survey, which includes questions on several aspects, including socio-economic factors, but also thermal comfort at home, perception and worries about the energy bill, community/network availability, awareness of energy topics... In addition, an annual short face-to-face meeting will be held to discuss participation in the EC and the Solidarity Fund project. This information will be collected and will guide the EC in assessing the progress of the living conditions (both objective and subjective ones), and in designing future improvements of the activities.
- The specific indicators are split into 5 blocks:
 1. **Socio-economic situation.** It includes indicators such as gender, age, the number of people living in the house, the number of persons with an income, suffering specific vulnerabilities, the actual income, the presence of social networks they can count on...
 2. **Building condition.** Indicators include how old the building is and when it was last reformed, the type of insulation of walls, windows, and rooftops, the perception of cold/heat in winter/summer..
 3. **Energy characteristics.** Indicators include the type of appliances used, the type of energy supply (electricity, gas, centralized, individual...).



4. **Energy cost.** Indicators touch on the topic of total monthly expenses for energy, the worry that this has on the family, the energy bill awareness, and potential delays in bill payment (and consequent energy cuts).

Policy integration and replication

This process has been able to define criteria and prioritization guidelines according to the local characteristics, needs and identified conditions. This has been done with the consciousness that, in each territory, needs and situations can be extremely different and that vulnerability can be defined in different ways. Because of this, it is recommended that policymakers take this into account and not define vulnerability and energy poverty with a unique definition applicable to all situations. Leaving space to adapt definitions to the local contexts can make the difference, and who better knows the needs of a territory than people living in the same neighbourhood.

One of the potentialities of energy communities is the knowledge and close contact with the territory and its unique characteristics. It is a powerful tool that can convey resources, tools and support to the population through capillary networks and presence in the territory. Energy communities can be an important bridge, able to connect public funds for alleviating energy poverty with the beneficiaries and people who really need these supports. Nevertheless, EC cannot be responsible for fighting against energy poverty, since, at least in Spain, they are still young and self-financed entities that struggle to achieve economic viability, and they are not able to autonomously collect important funds for this objective. Because of this, collaboration with public entities is crucial to advance towards the goal of tackling energy poverty, and public funds are necessary to make this collaboration effective. Energy communities, being in close contact with the local people, could give feedback to ensure that the public policies always take into account the social aspects, needs, and consequences of the implemented strategies.

This type of collaboration can be explored in Barcelona, by linking any district (aggregation of neighbourhoods) government and funds with the EC operating in the territory. This format can be studied in the city, thanks to the EC network already existing and highly organized, and once tested and improved, it could be later scaled up to the national level.

Feasibility of technical solutions at demonstrator level

Renovation intervention feasibility main project

In 2025, CELB wanted to promote the reform of a very old building, La Diversa. It is an important building for the EC: it is a housing cooperative, and on its rooftop, CELB has the first PV plant installed. The housing cooperative is a member of CELB, and so are all the people living in the building.



CELB took care of preparing the technical project of the renovation, and of finding the public financing for building renovation (a combination of EU and municipal funds). The municipal regulation did not allow the EC to present the project to the call, since the EC is not allowed to represent the building, irrespective of their close relationship, and to request the funds.

The housing cooperative, which is in charge of managing the building, was supposed to be the entity presenting the project and asking for a loan to cover the rest of the needed investments. Nevertheless, the cooperative is small and an important percentage of its households are in economic vulnerability; because of that, asking for a loan from a financial institution is a complex process, and they need to commit in a way that is not possible. Another strategy considered was to involve the building owner, a foundation that promotes cooperative housing in Catalonia; in this case, the access to financing was slightly easier, but the decision process was long since the foundation manages many similar projects and it had to define an internal strategy; at the same time, the public funds were only available for a short time. All these administrative barriers made the rehabilitation of the building not possible in the expected period, especially for projects in buildings where low-income families live.

CELB is still working to implement the project and to be able to achieve this objective. Nevertheless, this redefinition of the process is taking an important amount of resources, efforts, and time, which are making the viability of the project less certain. In addition, in this period, the cost of raw materials has been increasing significantly; the initial budget set, which was already important, is now increasing, making the project less viable.

Assessing a diverse range of renovation interventions

In addition to the complete renovation of La Diversa building, which will be the example on which a renovation service of the CE will be structured, CELB is also considering other types of actions in the renovation and energy efficiency sector.

Energy Audits

Since the beginning of its activities, CELB has been focused on designing projects to meet real needs, after mapping the current situation and the interests of local people.

In order to provide useful information to its members, CELB is interested in supporting its members in realizing energy audits at their buildings, which will help them identify the most suitable low and medium-renovation-level measures to increase the buildings' energy efficiency and, thus, reduce energy costs and increase energy comfort at home.

A first auditing opportunity will be offered in summer 2026 to a limited number of households, thanks to a collaboration with another energy community, Som Comunitat Energètica del Barcelonès, and OECOOP, a second-degree cooperative aiming to support EC to implement energy transition in their territories. An open call to house auditing will be made by CELB to its members in the summer of 2026.



After this, if the response to the first call is good, a second call can be organized in 2027.

Renovation mapping campaign

In Barcelona, most of the buildings are really old, built before 1980 and never refurbished. The need for deep refurbishment is high, either for security, energy waste and energy comfort reasons. Most households are not equipped with heating, necessary in winters, nor with air conditioning, which every year is becoming more fundamental in summers. These structural lacks are usually overcome with small portable electric heating systems, and with fans for summer. Strengthening the insulation of buildings in its basic aspects, such as windows, is thus crucial to ensure that these measures can at least provide comfort in the rooms where they are used.

Public funds are sometimes made available by the municipality of Barcelona, but with an irregular timing, and with no simple information on how to achieve fundings.

CELB proposes to realize a mapping campaign to identify buildings interested in renovation activities (either full renovation or soft measures such as window and door replacements) in the neighborhood. In this way, CELB can centralize the local interest in the territory and could convey clear and organized information to the members when public funds are made available, supporting members in the complex process of applying for them. This is especially useful for families in a more vulnerable situation, where the lack of money prevents most initiative of investment, and the lack of administrative and technical knowledge, as well as the lack of time to inform and research, prevent initiative in this sense. CELB could thus become the entity that centralizes information and simply explains how to get to the funds and why this is important. The energy desk already available at CELB premises could also provide this type of service to CELB members and interested people. To do this, CELB needs to coordinate closely with other entities working with similar types of services (such as the PAE, and the public entity „Agencia de l'habitatge de Catalunya, Institut Municipal de l'habitatge i Rehabilitació de Barcelona“).

Energy-sharing and demand-response schemes

The Spanish and Catalan legislation does not allow the implementation of peer-to-peer energy sharing or the definition a posteriori of optimized distribution coefficients, which would be an interesting option to increase the optimization of the energy systems of the EC and to redistribute energy surplus to needy families.

Demand-response schemes are currently not foreseen in the future actions of CELB. In Spain, smart meters are not widespread, and the currently available technology (for example, for consumption visualization) does not allow to follow consumptions in real-time, but with a delay of 3-4 days. Local tools for energy consumption tracking are currently under development (Join Energy), but they are not yet available to the final users. Because of this, the short-term strategy of CELB is not focused on these aspects.



One thing that will be explored is the optimized energy sharing between energy community members and specific consumers with irregular consumption patterns. For example, in late 2026, CELB will collaborate with UPC (Universitat Politècnica de Catalunya) to study the optimal strategy to share the electricity generated by a local school (Institut Montserrat), equipped with a PV plant. The generated energy is not consumed by the school during summer months (July and August), during weekends and other holiday periods (Christmas, Easter, Carnival breaks). The goal of this collaboration is to define consumption coefficients for each hour of the year, and to assign exceeding energy in those periods to consumers (such as associations working with vulnerable collectives, civic centres that are recognized as climate shelters, vulnerable collectives...).

In addition, in mid-2026, CELB installed a battery associated with one of its new PV plants. In the second half of 2026, CELB will study strategies to optimize the use of this battery and to have a collective storage project to be proposed to its members from 2027. In late 2026, some pilot users will be selected to test the strategies proposed for battery use, and will provide actual consumptions, savings and behavioural data to CELB in order to be able to study the results of the trial. The users of this pilot test are currently under selection, and will probably be an office building, an evening user (a cinema or a bar) and 2 residential users.

The goal will be to provide this service to users who serve vulnerable collectives, such as associations or meeting places, so that these groups can indirectly benefit from this project. Training sessions will be organized once the scheme is defined, and will be especially directed to women, who are the users who most commonly use energy at home.

CELB is currently looking for an optimal tool for tracking energy consumption and empowering users to adapt their behaviour to the energy availability.

In 2026, CELB is holding several meetings with tools providers operating in the territory, to identify existing options and understand if they fit CELB needs.

Meetings have been held with Aiguasol, Inergy, Circe and SomComunitats and Arkenova. None of the analysed software presents all the characteristics needed by CELB:

- Energy tracking
- Savings tracking with real-time updated energy costs, including tax variability
- Administrative interaction between CELB and users, possibility to sign documents and authorization
- Weather and use forecasts
- Behavioural module with recommendations and tips
- Reasonable cost for an energy community



In the second half of 2026, CELB will continue interacting with these entities, and potential new ones, to include the missing functionalities and will select a proper tool to be used by its members.

Lessons learned and reflections on the process

The process of approaching the energy community was complex, since it was a first experience in Catalonia and the regulation was not ready; at the same time, there were no other examples or good practices to be adopted.

In this sense, CELB proposed a first renovated process that demonstrated to be ambitious, and that regulation did not allow the CE to implement because of the lack of recognition in the market it wanted to act in.

In any case, good practices have been identified. First of all, the process of project design has been led with a co-design approach: the needs, interest and availability of the people living in the building to be reformed had to be taken as starting points to decide which measures were to be proposed. Initial very ambitious proposals were considered, but during co-design sessions, they were discarded by the final users, since they involved too high costs. The co-design sessions were an example of an inclusive and safe space, where everybody could express doubts, uncertainties and worries about the costs that the project could involve for single households. Ensuring this safe environment was crucial to make people part of the project, especially the families with lower economic means: they were consulted on many different occasions, to make sure the project was adapted to the actual possibilities of all members.

It was observed that women had a clear awareness of how low-insulated walls and windows involve energy (and economic) losses when having to heat and cool the apartment. Because of this, involving women in the decision-making process was crucial to get all the families on board and to push the ambition of the renovation forward, when adapted to the budget.