GENDER4POWER

The citizens' fight against energy poverty

The role of energy communities and other citizen initiatives

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1. Introduction and methodology

This report explores the role of energy communities in addressing energy poverty in Austria, with a particular focus on inclusive and gender-responsive approaches. It forms part of the broader Gender4Power project, which aims to promote equitable participation in the energy transition and ensure that vulnerable groups are not left behind.

The Austrian context presents both opportunities and challenges for energy communities seeking to alleviate energy poverty. Recent regulatory developments, such as the Renewable Energy Expansion Act (EAG) and the new Electricity Act (ElWG), have enabled new forms of citizen participation in energy production and distribution. At the same time, structural barriers, ranging from digital exclusion to financial constraints, continue to limit access for many households, particularly those affected by poverty, low education levels, or gender-based inequalities.

To understand these dynamics, this report draws on qualitative insights gathered through expert interviews. These interviews were conducted with stakeholders involved in energy communities, social organisations, and research institutions. The aim was to capture practical experiences, identify barriers to participation, and highlight innovative strategies that promote social and gender equity within energy communities.

The methodology employed is exploratory and participatory in nature. It includes semi-structured interviews with experts and practitioners, as well as a review of selected case studies of solidarity-based energy communities. The findings presented here reflect a diverse range of perspectives from across Austria.

Throughout the report, particular attention is paid to gender aspects, including the visibility of women in decision-making roles, the accessibility of energy-related information, and the design of inclusive participation models. The goal is to provide an understanding of how energy communities can contribute to a just energy transition, one that empowers citizens and addresses the needs of those most affected by energy poverty.

2. Energy poverty and the measures to tackle it

A common statistical approach defines vulnerability through income-related poverty risk. A household is considered at risk of poverty if its equivalised net income is below 60% of the national median income.

In 2024, this threshold was approximately 1,661 Euro/month for a single-person household.

This benchmark is frequently used to determine eligibility for social assistance and targeted subsidies.

In 2023, 4.3 % of households in Austria reported being unable to afford adequate heating for their homes. Furthermore, in 2023, households with low incomes (at risk of poverty) and above-average energy costs (>140 % of the median) accounted for 4.2 % of the population. In total, this amounts to approximately 8.5 % of energy poor households. This figure reflects a persistent challenge of

energy poverty.. Rising energy prices, inflation, and limited access to support mechanisms have intensified the strain on household budgets, making essential services like heating unaffordable for thousands of residents.

Energy poverty remains a pressing issue in Austria, particularly affecting households with low income, limited access to energy-efficient housing, and restricted participation in the energy transition. Recent studies and stakeholder insights confirm that energy poverty disproportionately impacts women, older adults, and single-parent households—groups that often face additional barriers due to digital exclusion, limited financial resources, and lack of representation in decision-making processes.

Austria has taken steps to address energy poverty through targeted programmes and regulatory frameworks. Key national initiatives include:

- "Sauber Heizen für Alle": A federal programme supporting heating system replacement for households affected by energy poverty, offering free energy consultations and assistance with funding applications.
- "Sanieren für Alle": A regionally funded renovation scheme in the Federal province of Styria, aimed at improving energy efficiency in low-income households.
- Social Energy Advice Services: Provided through programmes such as "Energiesparen und Gerätetausch", these services offer tailored support to vulnerable groups, including help with appliance replacement and energy-saving guidance.

Despite these efforts, structural challenges persist. Stakeholders report that data gaps, fragmented responsibilities, and limited planning security hinder the effective targeting of support measures. In urban areas, social housing providers and local governments tend to be more engaged, while in rural regions, awareness and coordination remain limited.

The legal framework for energy communities in Austria has evolved significantly since the introduction of the Renewable Energy Expansion Act (EAG) in 2021. This legislation enables citizens to jointly produce, consume, store, and sell energy across property boundaries. As a result, various forms of energy communities, including renewable energy communities (RECs) and citizen energy communities (CECs), have emerged across the country.

However, the inclusion of vulnerable households in these communities is not yet widespread. While solidarity-based models are gaining traction, many energy communities still struggle to integrate social objectives into their operational structures. Lack of resources, awareness and limited outreach to marginalised groups remain key obstacles.

In this context, the emergence of solidarity-driven energy communities represents a promising development. These initiatives aim to redistribute surplus energy, offer reduced tariffs, and create inclusive participation models. The following sections will explore how such communities operate in Austria, the measures they implement to combat energy poverty, and the barriers they face in doing so.

3. Energy communities in Austria

In Austria, energy communities have emerged as a promising approach to addressing energy poverty through decentralised, citizen-led energy production and redistribution. While the legal framework — particularly the Renewable Energy Expansion Act (EAG) — has enabled the formation of Renewable Energy Communities and Citizen Energy Communities, the integration of social and solidarity-based principles into these structures remains at an early stage. Nevertheless, a growing number of initiatives are pioneering inclusive models that aim to redistribute energy and empower vulnerable groups.

This chapter provides a basic understanding of energy communities in Austria, while Chapter 4 focuses on how these communities can contribute to addressing energy poverty. Section 3.1 presents an overview of energy communities, including their legal framework, different models, key similarities and differences, and areas of application. Section 3.2 highlights key figures on the development of energy communities since 2021, and Section 3.3 offers an outlook on the new legal framework, adopted in December 2025 and set to take effect on 1 October 2026.

3.1. Energy communities overview

Legally, it has been possible to establish energy communities in Austria since the end of 2021. At the same time, the Coordination Office for Energy Communities was established to support their development. Since then, the office has provided a wide range of services, including information materials, FAQs, setup guides, events, and stakeholder management. Much of the information presented in this chapter is based on resources and guidance provided by the Coordination Office, e. g. on its website.

Since 2017, multiple individuals sharing a common grid connection — such as residents of multi-apartment buildings — have been able to produce electricity through a joint generation plant ("gemeinschaftliche Erzeugungsanlage", GEA) and utilize it collectively.

Since 2021, it is possible to set up three different types of energy communities, namely, local or regional renewable energy communities and citizen energy communities. This enables multiple individuals to generate, store, consume, and sell energy across property boundaries, enabling greater flexibility and collaboration in renewable energy projects.

Table 1 summarizes the main characteristics of all four types. The key differentiating factor among the four energy sharing models is the spatial proximity of members, determined by their position within the electricity grid infrastructure. The closer the members are located within the electricity grid, i.e. the closer electricity consumption and generation are to each other, the greater the reduction in grid charges. The underlying rationale is that, for the electricity volumes exchanged in this manner, higher grid levels are not utilized and therefore no corresponding grid fees are charged. This should encourage electricity consumption as close as possible to the point of generation.

While joint generation plants are not energy communities in the strict legal sense, they are nevertheless included here unless explicitly excluded.

Table 1: **Comparison of energy sharing possibilities in Austria**

	Joint Generation Facility (GEA)	Renewable Energy Community, local and regional (REC)	Citizen Energy Community (CEC)
Minimum number of participants	Minimum of two participants	Minimum of two participants	Minimum of two participants
Type of energy	Electricity	Renewable electricity and heat	Electricity
Legal form	Contract and system operator	Own legal entity	Own legal entity
Financial benefits	grid fees for electricity shared within the community are completely exempted	Financial incentives on grid fees & charges	No incentives on grid fees & charges
Proximity criteria	Use of a direct power line	Use via a transformer station or a substation	Nationwide (Austria-wide)

Source: https://energiegemeinschaften.gv.at/, adaption and translation: AEA

Common rules for all four types

While the four types of energy community models differ in aspects such as proximity criteria, reductions in grid fees, the type of energy that can be shared, or the types of members permitted (see below), certain requirements apply to all models.

Energy communities must consist of at least two members, with no legal upper limit on the number of participants. Any limitation on size may arise solely from technical or practical considerations, such as proximity requirements. In general, it is recommended to design the participant structure as diverse as possible in order to benefit from synergy effects.

Since April 2024, it is possible in Austria to even be a member of more than one energy community. This applies both to existing participants and to those joining one or multiple energy communities. Multiple participation is available to full feed-in producers, surplus feed-in producers, and pure consumers. Each generation or consumption facility may participate in up to five energy communities simultaneously, drawing electricity from or supplying electricity to those communities.

Participation in an energy community requires an installed and activated smart meter, as the grid operator must record and forward 15-minute consumption and generation values to the community.

Each energy community must include at least one generation facility, with no legal upper limit. There is also no legal limit on generation capacity. However, restrictions may result from the grid connection, limited network capacity, or the permitted grid levels.

Billing within an energy community is carried out either by the community itself or by a service provider commissioned to perform this task. Importantly, all members of an energy community remain customers of their chosen electricity supplier, since the community rarely covers their full energy needs. Any electricity not supplied by the community is still provided and billed by the supplier and the grid operator.

Joint generation plants and citizen energy communities are, under the legal framework, only permitted to share electricity. By contrast, renewable energy communities are, in theory, also allowed to share renewable heat. In practice, however, their implementation in Austria has so far focused primarily on electricity.

In terms of generation technologies photovoltaic (PV) installations have so far been used predominantly across all four types of energy communities, as they are by far the easiest to integrate. Larger generation technologies, such as wind turbines, small hydropower plants, or even biogas facilities, are significantly more complex to integrate due to their much higher generation capacities. A single energy community can rarely provide sufficient off-take guarantees for such large installations. As a result, most energy communities to date have focused on PV, along with all the associated challenges (high generation at midday, no production at night, etc.). However, there are ongoing projects that also integrate hydropower, wind, or biogas plants within energy communities.

Joint generation plants (GEAs)

Since 2017, joint generation plants have been introduced in Austria and are regarded as early forms of energy communities. This model enables residents of multi-apartment buildings to participate in the energy transition by **jointly producing and consuming electricity on-site** via rooftop photovoltaic systems.

The legal framework for joint generation plants is set out in in Section 16a of the Electricity Industry and Organization Act.

A key requirement is that both the generation and consumption units are connected to a direct power line, typically at network level 7 (proximity criteria); transmission of the jointly generated electricity via the grid operator's facilities or the public grid is not permitted. Consequently, for electricity produced and consumed within the joint generation plant, **100% of grid charges and fees are exempted**. Surplus energy continues to be fed into the public grid and compensated according to the respective buyer.

Participants in a joint generation plant can be all natural or legal persons. There is no requirement to establish a separate legal entity; however, members must conclude a contract in accordance with Section 16a of the Electricity Industry and Organization Act. The contract is a civil-law agreement between the participants, which defines, among other things, the allocation of electricity generation, the price per kilowatt-hour and the procedures to be followed in the event a member leaves the joint generation plant.

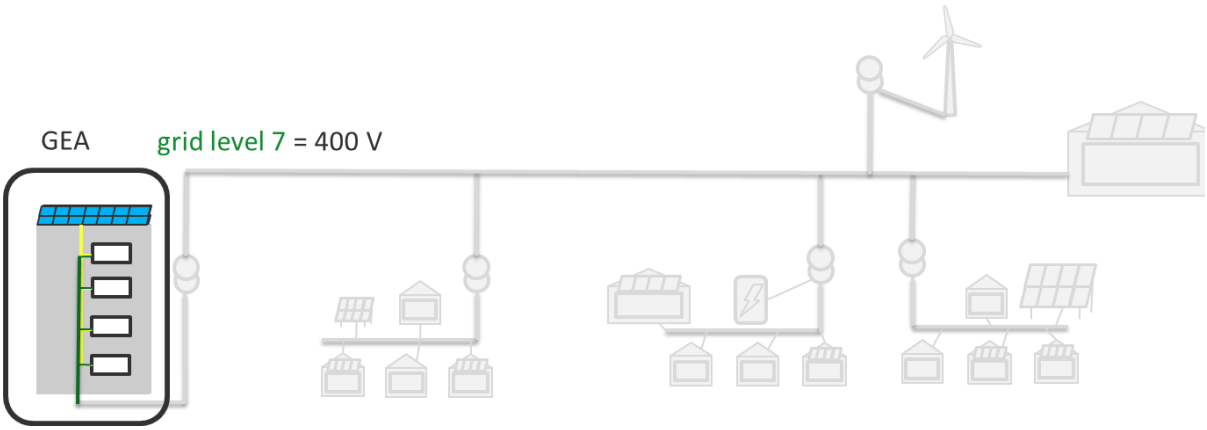

Figure 1: Visualization Joint Generation Plant, source: AEA

Local and regional renewable energy communities (RECs)

Local and regional renewable energy communities form the core of Austrian energy communities. They enable the generation, storage, consumption, and sale of **renewable energy across property boundaries**. The practical implementation of these two models is highly diverse, ranging from very small energy communities with only two participants, such as neighbors, to communities comprising several hundred participants spanning multiple municipalities.

The legal framework for RECs in Austria is provided by Part 6 of the Renewable Expansion Act (EAG) and Section 16c of the Electricity Industry and Organization Act (ElWOG 2010). Common provisions applicable to both renewable energy communities and citizen energy communities are set out in Sections 16d and 16e of ElWOG.

Renewable energy communities are limited to a "local proximity", which is defined in terms of the electricity grid levels. Participants in a local REC are connected within grid levels 6 and 7 (low-voltage network). Inclusion of grid levels 4 (medium-voltage busbar at a substation) and 5 classifies the community as a regional REC. Renewable energy communities are exempt from the **renewable**

energy levy and electricity tax. In addition, **grid charges are reduced**: for local RECs, the energy-based grid usage fee is reduced by 57 %, while for regional RECs the reduction amounts to 28 % at grid levels 6 and 7 and 64 % at grid levels 4 and 5. Under Austrian law, E-Control is mandated to determine reductions in network fees for energy communities. These reductions are calculated based on the differing shares of public grid usage across voltage levels. The detailed methodology and calculations underlying these reductions are not publicly accessible.

Members of renewable energy communities can be natural or legal persons, municipalities, local authorities, or small and medium-sized enterprises (SMEs). A wide range of organizational forms is possible for RECs, from associations to corporations; in practice, the association model is most commonly chosen, as it is the easiest to implement. The primary purpose of renewable energy communities must not be financial profit, which must be explicitly stated in the statutes or implied by the organizational form of the community. The focus has to be on regional benefits and advantages for the members.

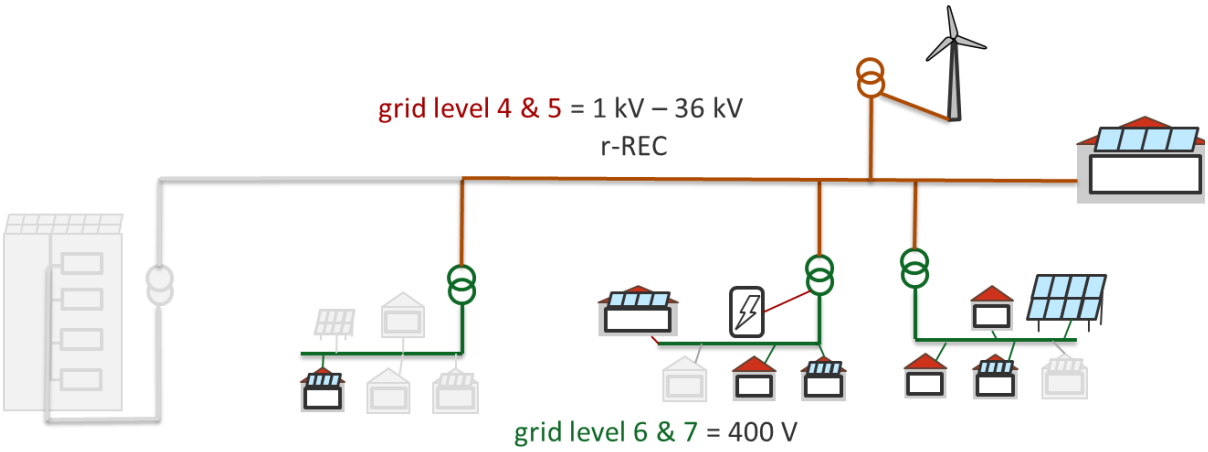

Figure 2. Visualization Local and Regional Energy Communities, source: AEA

Citizen energy communities (CECs)

In contrast to renewable energy communities, citizen energy communities may extend **across the concession areas of multiple grid operators throughout Austria**. However, they are limited to electricity and **do not benefit from financial incentives**, such as greed fee exemptions. The implementation of this energy sharing model is also highly diverse, ranging from citizen energy communities with only two participants, for example, a rooftop photovoltaic system in a rural area sharing electricity with an apartment in an urban setting, to nationwide energy communities comprising several hundred participants.

Citizen energy communities are not restricted to renewable energy sources; in theory, they may share any form of energy, although in practice all CECs use renewable electricity.

The legal framework conditions for citizen energy communities are defined in Section 16b of the Electricity Industry and Organization Act (ElWOG). Common

provisions applicable to both renewable energy communities and citizen energy communities are set out in Sections 16d and 16e of ElWOG.

In contrast to renewable energy communities, electricity companies and large enterprises are allowed to participate in citizen energy communities; however, they are not permitted to exercise control. Control may, for example, mean that natural persons, local authorities, and small enterprises hold the majority in the general assembly and are able to approve significant amendments to the statutes.

3.2. Key figures and success factors

This chapter gives a brief overview of key figures and summarizes the success factors of energy communities in Austria, illustrating their growth, structure, and distribution over recent years.

Figure 3 illustrates the development of energy communities in Austria from December 2021 to June 2025, based on the official monitoring reports for the Renewable Energy Expansion Act (EAG) from the regulatory authority, E-Control.

The orange bars show the development of joint generation plants (GEAs), the green bars represent local and regional renewable energy communities (RECs), and the blue bars indicate citizen energy communities (CECs). Some data points are missing: no data is available for GEAs for Dec 2022, June 2023, and Dec 2023, as well as for CECs at Dec 2023.

A strong upward trend is visible for all community types. Energy communities could legally be established in Austria from October 2021 onwards. Early pioneer communities set up immediately, with 5 communities in the first few months, and growth continued rapidly to 9,648 registered energy communities by mid-2025, representing over 100% growth in the last year.

CECs started later and grew more slowly compared to RECs. One reason for this is, that cross-network operation across different distribution areas was only possible later. This figure highlights both the rapid growth of Austrian energy communities and the differences in development speed due to regulatory and operational factors.

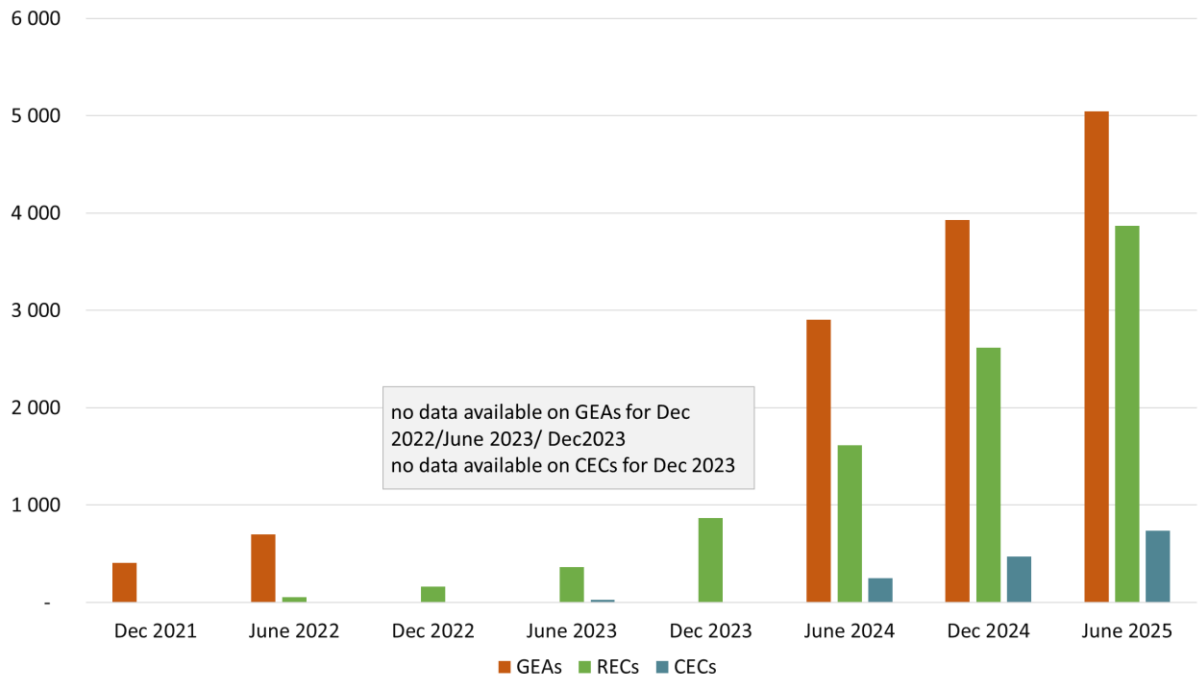

Figure 3: numbers of energy communities (GEAs, RECs, CECs) in Austria, 2021-2025; (no data available on GEAs for Dec 2022/June 2023/ Dec2023; no data available on CECs for Dec 2023), source: EAG-Monitoringberichte 2022-2025, E-Control

However, to fully evaluate the impact of RECs on the energy landscape, it is not sufficient to consider only the number of communities; the activity within each community is crucial. For this purpose, data on the energy produced and consumed within the communities, or installed capacity would be necessary. Unfortunately, such data is not available to the required extent.

Since the Monitoring Report 2025, however, data on feed-in and consumption metering points have been available for three data points. A clear upward trend can also be observed in these metrics.

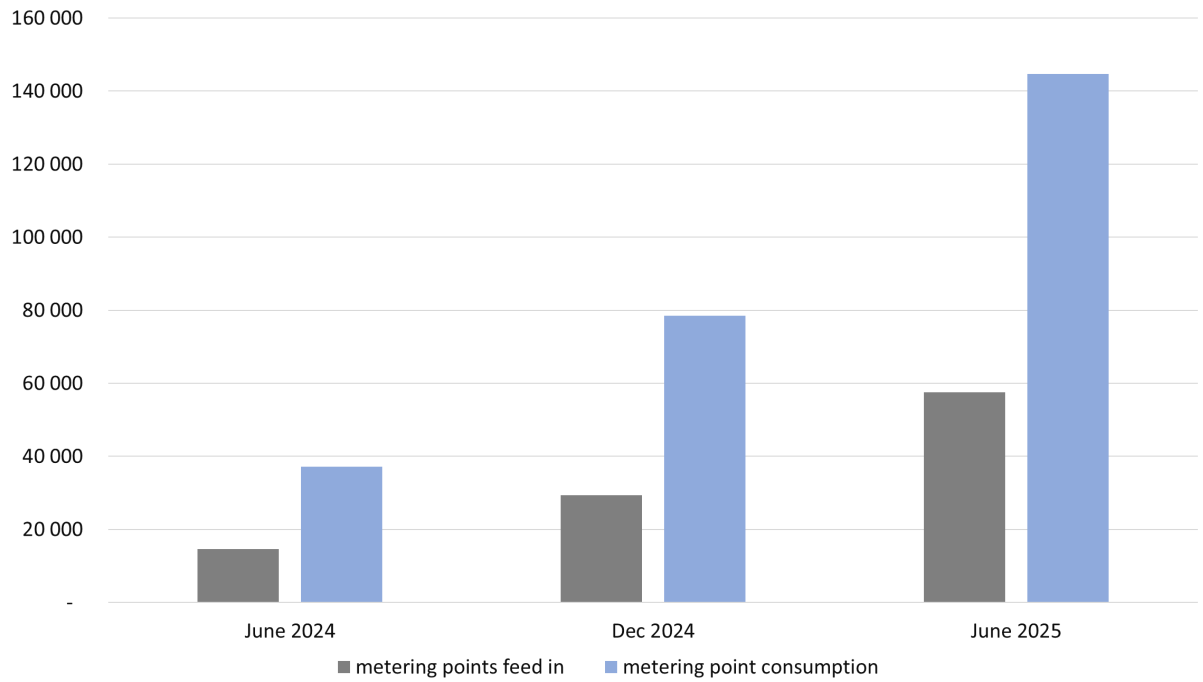

Figure 4: Metering Points of Austrian Energy Communities – Feed-in vs. Consumption, 2024-2025, EAG-Monitoringbericht 2025, E-Control

The **success factors** for the uptake of energy communities in Austria are manifold. A key foundation was the establishment of a functioning legal and regulatory framework, combined with continuous efforts to improve it in cooperation with all relevant stakeholders. In addition, a well-developed support system has been put in place, providing both financial incentives and advisory services to energy communities.

The Coordination Office for Energy Communities was established in 2021, simultaneously with the implementation of the legal framework. This office serves as a single point of contact for all stakeholders, offering quality-assured information on its website, including factsheets, founder guidelines, FAQs, sample contracts, best practice examples, and a hotline. It also facilitates information exchange and knowledge transfer between ministries, regulators, associations, interest groups, and energy communities, and provides important input for the ongoing adjustment and development of the legal framework.

Financial support for members of operating communities, general support schemes for renewable energy, and specific schemes for the planning and implementation of energy communities have further contributed to their growth. Public funding has been provided in phases from 2021 onwards, starting with pioneer projects and the first operational communities, and continuing today with innovative "flagship" projects that go beyond the standard model. These showcase projects must meet several innovation criteria, including technological, social (such as addressing energy poverty), ecological, and organizational innovations.

3.3. New legal framework

The new Electricity Act (ElWG) was passed by the National Council on 11 December 2025, and will come into effect on 1st of October 2026, replacing the 15-year-old ElWOG. Among others it implements European legislation, including the EU Internal Electricity Market Directive and the Renewable Energy Directive, into Austrian law.

This chapter provides a brief overview and outlook on key changes regarding energy sharing. However, many aspects still need to be discussed and implemented in the coming months.

With regard to energy sharing, the ElWG introduces new possibilities and changes to existing models. In particular, it establishes the new concept of peer-to-peer contracts, under which two or more parties may jointly use self-generated electricity and regulate this arrangement contractually, without the need to establish a separate legal entity.

The term **active customer** has been newly introduced. Active customers have defined rights and responsibilities and form the basis for all energy sharing models. This includes joint generation plants, renewable energy communities, citizen energy communities, and peer-to-peer (P2P) contracts. Legal rules apply both to existing energy communities and to new models such as P2P.

The new ElWG also stipulates that certain supplier obligations apply to active customers. These rules cover household customers with generation units over 30 kW and other active customers, renewable energy communities, and citizen energy communities with capacity over 100 kW. Suppliers must ensure proper accounting, billing, and reporting, including metering, grid balancing, and documentation. These obligations help ensure reliable operation, transparency, and fair treatment of all participants. However, a newly introduced "organizer" can be appointed to manage the specified supplier obligations on behalf of active customers and energy communities.

Furthermore, producer communities are now explicitly authorised to own and operate energy storage systems. At the same time, administrative and regulatory barriers related to their establishment and operation are reduced.

Regarding the challenge of energy poverty and energy communities the ElWG § 68(6) establishes specific provisions for local authorities. Municipalities or other public bodies participating in energy sharing with their own generation assets must ensure that **vulnerable households** and **charitable or social institutions hosting vulnerable end-users** have access to the shared energy. A minimum of **10 % of the electricity** generated annually by the facility and fed into energy sharing must be made available to these groups. The supplied electricity may be gifted or offered at discounted rates, although this is not legally mandated; it may also be supplied at the applicable standard tariffs.

Although not directly related to energy communities, the new law introduces a **social tariff for particularly vulnerable households**, aimed at helping them keep energy costs under control. The final design, which must be implemented by April 2026, provides eligible households with a highly subsidised rate for up to

2,900 kWh of electricity. The tariff is based on a prescribed price of 6 cents per kilowatt-hour, with an upper reference value reflecting only the wholesale market price. Eligible households include those exempt from certain statutory energy levies due to low income or social benefits (so-called OBS-exempt households), as well as the unemployed, recipients of care allowances, minimum pensioners, and social assistance beneficiaries. The scheme is financed with up to € 60 million from energy suppliers supplemented by federal funds. However, several practical aspects, including tariff design and implementation procedures, remain unclear. This social tariff may, however, make participation in an energy community financially unattractive for these households.

4. Energy communities facing energy poverty

As stated by the European Commission, energy communities enable collective and citizen-driven energy actions that support the clean energy transition. They can increase public acceptance of renewable energy projects, mobilise private investment and contribute to the restructuring of energy systems by empowering citizens to participate directly and benefit locally. These benefits include improved energy efficiency, lower energy bills, reduced energy poverty and new local green job opportunities.[1]

In Austria, many of these anticipated effects can already be observed, however still at a small but steadily growing scale.

It is important to note, however, that in practice **Austrian energy communities are almost exclusively focused on the collective generation and sharing of electricity** (and heat). They are not linked to building renovation, thermal refurbishment or other structural energy efficiency measures. As a result, their contribution to addressing energy poverty is currently indirect and limited to electricity-related cost reductions and awareness-raising, rather than improvements in housing quality or overall energy demand.

Within this limited scope, however, energy communities nevertheless influence the energy system beyond their purely technical function. They create significant changes in awareness and behaviour.

Energy communities have emerged as a bottom-up movement within a top-down regulatory framework and display a high degree of diversity, ranging from very small initiatives with only a few members to large communities with several hundred participants, organised either privately or professionally.

At the same time, the bottom-up nature of energy communities entails structural limitations. Their establishment and management largely rely on voluntary engagement, which often reaches its limits, particularly when financial margins are low. Moreover, many Austrian energy communities face an imbalance between electricity producers and consumers. While prosumers are generally well informed

[1] https://energy.ec.europa.eu/topics/markets-and-consumers/energy-consumers-and-prosumers/energy-communities_en

and motivated to participate, potential consumers, especially vulnerable households, often lack information, trust and resources to engage with the model.

Despite these challenges, energy communities hold clear potential to contribute to addressing energy poverty. As participation must not result in financial disadvantages for members, the model relies on price differences between conventional electricity supply and locally shared renewable energy, complemented by public support schemes. Where these conditions are met, energy communities can offer electricity prices below market rates. Several Austrian initiatives already target vulnerable groups explicitly, either through dedicated tariffs or by establishing energy communities with a social focus

This section provides an overview of how energy communities can contribute to addressing energy poverty. It is structured around three main areas: inclusiveness and participation, access to energy, and citizen empowerment and training. In addition, it illustrates how initiatives can effectively combine energy communities with building refurbishment and energy efficiency measures and presents a detailed case study.

4.1. Inclusiveness and participation measures

Although comprehensive data is lacking, interviews and practical experience indicate a clear trend: **energy communities in Austria are predominantly founded and managed by technically skilled individuals**, most often older men. Despite the wide diversity of energy communities, from small grassroots initiatives to larger institutional projects, now numbering several thousand nationwide, participation and leadership remain largely concentrated among technically skilled and better-informed actors.

In contrast, potential consumers, especially vulnerable or energy poor households, often lack the knowledge, trust, or resources to participate, highlighting a persistent imbalance in awareness and engagement. The fact that only around 5 % of the Austrian population actively switch electricity suppliers underlines the issue that public engagement with energy issues and pricing is very low.

Vulnerable groups, including older adults with limited digital literacy, individuals facing language barriers, and people with low energy literacy or limited time and resources, often require targeted outreach, tailored communication, and supportive measures to ensure meaningful participation.

As a result, a growing challenge in Austria is the **imbalance between producers and consumers**: many energy communities now have a surplus of producers but too few consumers. This issue is particularly evident in smaller communities, where attracting new consumers requires substantial explanation, trust-building, and engagement efforts.

Inclusiveness and participation in Austrian energy communities are closely linked to their bottom-up nature. While this approach empowers citizen-driven action, it also entails structural limitations. The establishment and management of energy communities rely heavily on voluntary engagement, which can quickly reach its limits, particularly when financial margins are low. Founders and active members

may not explicitly prioritize social inclusion, or, if they do, they often struggle to balance it with operational responsibilities.

Municipality-led Energy Communities: Many energy communities in Austria have been founded and managed by municipalities. Also here, the range is wide: in very small municipalities, community management is often handled by municipal staff alongside their other duties, whereas larger municipalities may employ dedicated energy experts, or even outsource the setup and management of the community entirely.

Under the new Electricity Act (see Chapter 3.3), municipalities or other public bodies participating in energy sharing with their own generation assets are required to ensure that vulnerable households, as well as charitable or social institutions hosting vulnerable end-users, have access to at least 10 % of the shared energy. However, there is no obligation for them to actively seek out these consumers. While opening municipal-led communities to consumers outside the municipality can help improve inclusiveness, it does not automatically ensure broad participation. Conducting targeted outreach and awareness campaigns for underrepresented groups are necessary to further strengthen engagement and inclusion.

Despite all these challenges, Austrian energy communities have demonstrated a significant educational and awareness-raising role, helping participants better understand electricity generation, consumption, and pricing. By engaging citizens directly, these communities contribute to a greater understanding of the energy system, foster informed decision-making, and promote more responsible energy use. They also provide a platform for dialogue, enabling members to discuss challenges such as energy costs, renewable integration, and local energy planning.

Fundamental inclusiveness and participation principles are embedded from the outset. **No one must be excluded without justification** (e.g. insufficient production capacity), and membership rules generally allow all local households to participate, including vulnerable or low-income groups. This principle ensures that energy communities are open by design, providing opportunities for households who might otherwise be marginalized in the energy market.

In general, there are **no insurmountable administrative or technical barriers** to joining energy communities. Registration procedures are typically simple and require only minimal paperwork, although digital registration processes can still pose a challenge for some individuals. Entry costs are usually very low or even nonexistent. Together, these relatively low barriers to entry are important for fostering broad participation and ensuring that energy communities remain accessible to a wide range of local residents.

Energy communities also have to implement **transparent governance structures**, often through association statutes or equivalent frameworks in other legal forms. Such structures allow members to actively engage in decision-making processes, from planning and investment decisions to operational management. By combining accessible participation with clear governance, energy communities not only enable members to influence their local energy system but also strengthen social cohesion, trust, and collective responsibility within the community.

Some energy communities have introduced innovative mechanisms to further enhance participation and engagement. In Neudörfl, for example, monthly community meetings are used to foster dialogue and encourage regular involvement, a practice that is even formally anchored in the community's statutes. Other approaches include anonymous feedback tools, the appointment of ombudspersons, and the formal representation of vulnerable groups within decision-making bodies. These measures aim to ensure that all members, regardless of socio-economic status, have a meaningful voice in shaping the community's activities and strategic direction.

The **sozialEG** project, which develops and tests operational models for socially just energy communities, reinforces the importance of structural and procedural measures to achieve genuine inclusiveness. It highlights that social justice in energy communities is not only about providing access to affordable energy but also about enabling members to participate actively in decision-making and to benefit from long-term improvements. The project further emphasises the need for training and capacity-building, ensuring that all participants understand their rights, responsibilities, and opportunities for meaningful engagement.

Energy communities do not directly address energy poverty by default, but they offer a powerful tool to do so. This potential can be realised to empower citizens, alleviate energy poverty, and foster engagement, provided that additional support mechanisms are implemented to include vulnerable groups and ensure equitable participation.

4.2. Access to energy

Energy communities provide households with locally generated renewable electricity at stable and often lower prices than commercial suppliers, improving energy affordability.

By pooling generation and consumption, they can further stabilise energy costs, protecting vulnerable households from market volatility. Participation in energy communities allows households that could not otherwise invest in solar panels or other local generation to benefit from shared energy infrastructure. Collective ownership and shared investment reduce upfront costs, making renewable energy accessible to low-income households. This approach also enables households without space, capital, or technical expertise to participate and consume locally produced renewable energy.

Beyond immediate cost savings, involvement in energy communities offers energy poor households access to cleaner energy, greater awareness of consumption, and inclusion in local energy systems, which can generate positive social and financial effects over time. Aggregating demand through community structures also allows energy communities to expand access to multiple households, including residents of multi-apartment buildings or social housing, which would be difficult for individual installations.

Access to affordable and sustainable energy is a core objective of many energy communities in Austria. Several social initiatives have developed mechanisms to

ensure that vulnerable households benefit directly from community-generated energy.

One of the most prominent examples is the **Energy WITH Spirit** initiative, which operates in partnership with diaconal institutions and educational facilities. In Bad Goisern, surplus photovoltaic energy from a student residence is shared with a nearby care home. The community has committed to allocating at least 10 % of its energy and financial returns to vulnerable groups. This commitment is embedded in the community's statutes and operational agreements, ensuring long-term accountability.

The **Robin Powerhood** initiative takes a different approach by enabling donors, ranging from private households to companies like Lidl, to share excess electricity with households in energy poverty. The donated energy is distributed via a digital platform and coordinated through social organisations such as Caritas and the Red Cross. The project has already reached over 140 members across eight federal states and has supported more than 90 energy poor households. The impact is tangible: donated electricity has enabled thousands of warm meals, laundry cycles, and showers for affected families.

The **sozialEG** project has developed two solidarity-based tariff models that further illustrate how access to energy can be made more equitable:

- Model 1: Direct Solidarity

  Vulnerable households pay a reduced tariff, enabled by members who accept lower compensation for their energy feed-in. The impact is immediate and measurable on the energy bill. In a simulated community with 38 consumption and 7 generation points, three producers agreed to reduce their feed-in tariff from 9 to 7.5 cents/kWh, enabling ten vulnerable households to access electricity at a significantly lower rate (18.8 cents/kWh vs. 28.11 cents/kWh from the grid).

- Model 2: Time-Based Solidarity

  Members pay slightly more, and producers accept slightly less. The resulting surplus is pooled and used to fund energy consultations and efficiency projects. For example, the EEG "Gemeinsam für die Zukunft" saves around 900 € annually, which is reinvested in advisory services. This model builds long-term resilience and community benefit.

These models demonstrate that solidarity and economic viability can coexist, and that energy communities can be designed to redistribute both energy and financial resources fairly.

4.3. Citizen empowerment and training

One key goal of energy communities is the empowerment of citizens. This objective becomes particularly important in the context of energy poverty and vulnerable households, where access to information, knowledge, and decision-making power can directly affect well-being.

While smaller, privately initiated energy communities may struggle to fully address these challenges due to limited interest, expertise, or time resources (see Chapter 4.1), several initiatives have placed a strong emphasis on citizen empowerment and capacity-building. These initiatives commonly implement workshops, information sessions, and training programmes designed to raise awareness about energy use, cost-saving opportunities, and active participation in community decision-making.

The Energy WITH Spirit initiative includes energy literacy training for both staff and residents of participating institutions. The aim is to build long-term awareness and capacity among vulnerable groups. Similarly, the SOL:E project in Graz offers events and materials designed to promote solidarity-based energy practices and encourage participation from diverse audiences. The project also explores participatory organisational development and co-creative methods to ensure that vulnerable groups are involved from the outset.

The sozialEG project places strong emphasis on training and education for all members of the energy community. It recognises that many affected households lack energy literacy and may not understand their rights or options. By embedding training into the community structure, sozialEG ensures that empowerment is not an afterthought but a core component.

Despite these efforts, gender-sensitive training remains rare. Interviews highlight the need for female role models in energy advisory roles and the development of formats that address the specific needs of women, particularly in low-income households. Increasing the visibility of women in technical and decision-making roles is essential to fostering inclusive participation. One expert noted that while women are increasingly present in research and stakeholder events, they remain underrepresented in practical training and advisory roles. There is a need to develop specific formats for women, promote female testimonials, and increase the visibility of female tradespeople in the energy sector.

4.4. Rehabilitation and energy efficiency

While energy communities in Austria are primarily focused on electricity production and redistribution, some research and social projects have begun to combine the concept of energy communities with broader objectives, such as building refurbishment, energy efficiency, and the inclusion of vulnerable households. These projects show how the energy community model can serve as a framework to integrate technical, social, and financial measures, addressing challenges that go beyond electricity supply, especially in urban contexts with complex ownership structures and multi-apartment buildings.

The EWV4Energiewende project in Vienna, for example, is conducting detailed analyses of building blocks owned by the Evangelischer Waisenversorgungsverein (EWV). These analyses include ownership structures, technical infrastructure, and social characteristics of the neighbourhood. The aim is to identify opportunities for decentralised energy solutions and targeted awareness campaigns. However, barriers such as the landlord-tenant dilemma, lack of creditworthiness among low-income owners, and legal constraints on shared infrastructure remain significant.

The Questionnaire for D2.3 highlights additional barriers: long lead times, lack of planning security, and limited data availability hinder the targeting of renovation measures. Vulnerable households often lack the financial means or creditworthiness to invest in energy-efficient upgrades. In the private rental sector, landlords have little incentive to renovate, especially when tenants bear the energy costs. In some cases, municipalities or non-profit housing providers deliberately delay renovations to avoid rent increases that could displace low-income tenants, many of whom are women, single parents, or pensioners.

The sozialEG models support the use of pooled funds for energy efficiency projects, such as household consultations and minor upgrades. This complements the technical and structural approaches seen in EWV4Energiewende and ensures that rehabilitation efforts are not only technical but also socially responsive.

4.5. Case Study: Energy WITH Spirit

Energy WITH Spirit is a pioneering initiative in Austria that exemplifies how solidarity-based energy communities can be designed to include and support vulnerable groups. The project is implemented in the evangelical-diaconal sector and brings together a diverse consortium of partners, including social institutions, educational facilities, technical experts, and planning organisations. It is funded under the Austrian Climate and Energy Fund and runs from March 2023 to February 2026.

The initiative is built around the concept of a solidarity-based energy community, whose core mission is to share renewable energy and financial benefits with socially disadvantaged households and individuals in basic care. The community is composed of:

- Producers: Property owners who install photovoltaic systems (e.g. Schülerheim Bad Goisern – a student residence, Evangelisches Realgymnasium Donaustadt – a protestant secondary school in Vienna)
- Prosumers: Institutions that both produce and consume energy
- Consumers: Vulnerable households and individuals
- Multipliers: Facilitators and mediators who support outreach and education

Technical and Organisational Structure

The project involves the installation of large-scale PV systems on two buildings: the Schülerheim Bad Goisern in Upper Austria and the Evangelisches Realgymnasium Donaustadt in Vienna. These systems are not financed through the project budget but are implemented by the participating institutions themselves. The energy produced is distributed within the community, with a minimum of 10 % of the energy (in kWh) and 10 % of the financial returns (in EUR) earmarked for vulnerable groups.

The community was formally established in September 2024, following a series of preparatory steps including technical planning, stakeholder engagement, and legal registration. Monthly online meetings were held to co-develop the community's structure, including its tariff model and governance rules. The solidarity principle

was embedded in the community's statutes and internal agreements, ensuring that the redistribution of energy and financial resources is not only voluntary but legally binding.

Implementation in Bad Goisern

The first operational energy community was launched in Bad Goisern, where surplus PV energy from the student residence is shared with the adjacent elderly residence. The energy exchange is facilitated through the Austrian market communication system (ebUtilities), and the community is registered as a market participant.

The community's tariff model is designed to be socially responsive. All energy produced is allocated to vulnerable groups, and at least 10 % of the financial surplus is redistributed to support energy poor households. This redistribution is not symbolic. It is structurally anchored in the community's business model and statutes, allowing for the transfer of funds to third parties, such as social institutions.

Expansion and Roll-Out

The project aims to expand the community by including additional buildings from the Evangelical Parish of Goisern, such as a kindergarten and a youth centre. A national roll-out is also being prepared, with the goal of replicating the model in other faith-based and social institutions across Austria.

To support this expansion, the project includes:

- Context and environment analyses to assess local needs and opportunities
- Development of business and operational models for replication
- Energy education programmes targeting both staff and residents
- Dissemination and stakeholder engagement to build awareness and support

Second Site: ERG Donaustadt

A second PV system was installed on the roof of the Evangelisches Realgymnasium Donaustadt in Vienna, with a capacity of 200 kWp. This system is part of a solidarity agreement whereby 10 % of the energy produced each quarter is monetised and donated to the refugee service's housing advisory unit. The funds are used to support energy costs for vulnerable households, demonstrating how energy communities can combine ecological sustainability with direct social impact.

Innovation and Impact

Energy WITH Spirit stands out for its co-creative approach, its integration of theological and ethical principles, and its commitment to measurable solidarity. It goes beyond technical implementation to address organisational, legal, and educational dimensions of energy justice.

The project has already achieved:

- Full operational status of its first energy community

- Statutory anchoring of solidarity principles
- Redistribution of energy and financial resources to vulnerable groups
- Development of replicable models for other institutions

It serves as a model of best practice for how energy communities can be designed to include and empower those most affected by energy poverty. Its emphasis on co-creation, legal robustness, and educational outreach makes it a valuable reference for future initiatives under the Gender4Power framework.

5. Main barriers faced by energy communities fighting energy poverty

Despite the growing number of energy communities in Austria and the increasing awareness of energy poverty, numerous barriers continue to hinder the effective inclusion of vulnerable households in these initiatives. These barriers are multifaceted, ranging from structural and financial constraints to awareness and social challenges, and often intersect with gender and equity issues.

Data, Knowledge, and Awareness Gaps

Participation in energy communities is often limited by gaps in knowledge, awareness, and data. On the side of vulnerable groups, potential consumers frequently lack the knowledge, trust, or resources to engage.. Public engagement with energy issues in Austria is generally low, as evidenced by the fact that only around 5 % of the population actively switch electricity suppliers. Vulnerable groups, including older adults with limited digital literacy, individuals facing language barriers, and those with low energy literacy or limited time and resources, often require targeted outreach, tailored communication, and supportive measures to enable meaningful participation.

From the perspective of energy communities, particularly smaller, privately organised ones, capacity constraints pose additional challenges. The establishment and management of these communities rely heavily on voluntary engagement, which can quickly reach its limits, especially when financial margins are low. Founders and active members may not be aware of energy poor households in their neighbourhoods, may lack sensitivity to social inclusion, or, if they are aware, often struggle to balance operational responsibilities with inclusive engagement. Identifying households in need is further complicated by privacy and social stigma, as many vulnerable individuals may not openly disclose their financial difficulties.

Financial Barriers

Participation in existing energy communities generally does not require substantial financial contributions. In Austria, many communities currently have an oversupply of producers and too few consumers, making it difficult to maintain a meaningful level of self-consumption within the community (see also Chapter 4.1).

Financial barriers mainly arise in areas where energy communities do not yet exist, and households with limited means would need to invest in renewable energy to establish a local or regional community.

Here, the lack of financial resources among vulnerable households becomes a critical issue. Many affected individuals, such as minimum pensioners, single parents, and low-income tenants, simply cannot afford to invest in renewable energy technologies. Even when subsidies or support programmes are available, bureaucratic complexity and a lack of targeted outreach often prevent those most in need from accessing them. Creditworthiness is also a major obstacle for private homeowners in poverty, who are frequently excluded from financing models such as contracting or leasing due to their financial situation.

Institutional and Governance Barriers in Municipal-led Energy Communities

Another major barrier is the fragmentation of responsibilities across different levels of government and institutions. Interviews reveal that in rural areas, there is often limited awareness of energy poverty among local administrations and energy providers. Social organisations may recognise the issue but lack the technical expertise or mandate to address it. This leads to a situation where no single actor feels responsible, and vulnerable households fall through the cracks. In contrast, urban areas with strong social housing sectors tend to have better coordination and more targeted interventions.

Gender Inequalities and Inclusion Barriers

From a gender perspective, several inequalities and inclusion barriers are particularly important. Energy and heating decisions within households are often perceived as "male domains", leading to the exclusion of women from advisory processes and technical discussions. Many women, especially older ones, lack access to targeted information and energy literacy, which limits their ability to navigate support programmes or engage with energy communities. Moreover, energy advisors and technicians are predominantly male, and there is limited awareness of the specific needs and living situations of female-headed households. While women are increasingly present in research and policy forums, their representation in practical implementation and decision-making processes remains low. There is a clear need for gender-sensitive formats, inclusive communication strategies, the involvement of trained ambassadors, and targeted outreach to ensure that women are not left behind in the energy transition.

Social and Participation Barriers

Social barriers also play a significant role. Vulnerable groups often lack representation within energy communities and may feel alienated by technical jargon or unfamiliar governance structures. In Burgenland, for example, interviews describe the emergence of "two-class communities", where well-connected initiators dominate, while others struggle to participate. The digital divide exacerbates this problem, particularly for older adults who are not online. Without proactive outreach and inclusive decision-making processes, these communities risk reinforcing existing inequalities.

Some energy communities have attempted to address these barriers through innovative approaches. The use of anonymous feedback tools, ombudspersons, and interest representation for vulnerable groups has been proposed. In Neudörfl,

monthly meetings and statutory requirements for repeated participation aim to foster inclusion. The sozialEG project offers two operational models that redistribute energy and financial resources in a socially just manner, either through immediate tariff reductions or long-term savings reinvested in energy advice and efficiency measures.

Despite these efforts, many communities still struggle to integrate social objectives into their core operations. The founding of an energy community is often resource-intensive, and once established, there is limited capacity to address additional social dimensions. As one interviewee noted, "the founding was hard enough—now we just want it to run." This sentiment reflects the need for external support, capacity-building, and policy frameworks that enable communities to go beyond technical implementation and embrace social inclusion.

6. Other initiatives targeting energy poverty

In Austria, several citizen-led and civil society initiatives contribute to the fight against energy poverty without operating as formal energy communities. These initiatives focus on social support, education, advisory services, and targeted redistribution, and often work in close cooperation with municipalities, faith-based organisations, and NGOs.

One such government initiative is the "Energiesparen und Gerätetausch" programme of the Climate and Energy Fund. This programme offers low-threshold energy counselling to households affected by energy poverty. Services include assistance with understanding energy bills and replacing inefficient appliances. The counselling is embedded in broader social support structures and is tailored to the needs of vulnerable groups. The implementing NGOs also support the dissemination of energy-saving information and help households navigate complex bureaucratic procedures related to energy subsidies.

Faith-based organisations also contribute significantly. For example, the Diakonie Flüchtlingsdienst supports refugees and asylum seekers in accessing safe and affordable housing. In the context of the Energy WITH Spirit project, the Diakonie's housing advisory service receives financial contributions derived from surplus energy production, which are then redistributed to vulnerable tenants. This model demonstrates how social institutions can integrate energy solidarity into their existing support structures without becoming energy communities themselves.

Finally, the Coordination Office for Energy Communities in Austria, also hosts workshops and peer-learning events that are open to broader civil society actors. These events facilitate knowledge exchange and help build capacity among NGOs, social workers, and local administrators who support energy poor households.

In summary, while energy communities are a part of Austria's strategy for addressing energy poverty, a number of non-community initiatives provide essential complementary support. These include advisory services, housing support, public education, and pilot outreach programmes. Their work ensures that vulnerable households receive assistance even when they are not part of a formal energy community.

7. Conclusions and recommendations

Energy community frameworks are generally open to broad participation, but in practice access often depends on energy literacy, digital skills, trust in collective models, and the time and resources needed to manage administrative or technical steps. This can systematically limit participation by vulnerable households. Typical barriers include low awareness of energy communities, limited digital and language skills, and difficulties engaging with onboarding and ongoing processes. As a result, many communities struggle to reach those who could benefit most from shared renewable electricity, contributing to a producer–consumer imbalance and weakening the potential social impact.

Energy communities do not reduce energy poverty by default, yet they can become a powerful tool to do so when inclusion is intentionally designed. Evidence from initiatives such as Energy WITH Spirit, SOL:E and sozialEG suggests that solidarity-based approaches can redistribute energy and financial benefits effectively, especially when combined with inclusive governance, co-creative development, and tailored tariff models. At the same time, volunteer-led communities often face capacity constraints: identifying and reaching households in need is time-consuming and complicated by social barriers and the low visibility (and sometimes stigma) of energy poverty. Gender aspects also require attention, as lower energy literacy among women and continued underrepresentation in advisory and practical decision-making roles can reduce inclusive participation; targeted formats, visible female role models and greater presence of women in technical training and advisory roles are important levers.

Complementary programmes and social services remain essential for households who are not reached by, or cannot join, energy communities. Municipalities and other public actors can play a decisive enabling role by leveraging public trust and local social infrastructure and by linking energy communities with social organisations for outreach and support. Stronger incentives could further accelerate inclusion, for example, additional benefits such as grid-fee reductions when the participation of socially disadvantaged households is demonstrated, though this raises a practical question of how to verify inclusion without creating excessive bureaucracy. One workable direction could be to require a minimum share of vulnerable households in publicly operated energy communities, or in communities above a defined size, paired with a proportional "proof-of-effort" obligation where targets are not met (i.e., documenting outreach attempts and explaining why inclusion was not feasible in the targeted area).

To strengthen the impact of energy communities and related initiatives, inclusion needs to be supported both through practical capacity building and through targeted incentives. Energy communities, especially smaller, volunteer-led ones, would benefit from training and hands-on support on how to reach and include vulnerable households, including guidance on accessible communication, onboarding processes, and cooperation with local support actors. At the same time, policy and funding frameworks could provide additional financial benefits for communities that include a minimum share of vulnerable households, for example through enhanced support schemes or other advantages linked to demonstrable social participation. Social and gender inclusion should be anchored directly in

statutes and governance arrangements so that it becomes a structural responsibility rather than an optional ambition, and solidarity-based tariff models should be further promoted to translate participation into tangible affordability gains. Because complex procedures can deter both households and communities, reducing bureaucratic hurdles is essential, including simplified participation processes and clearer administrative pathways. Stronger cooperation with social organisations is equally critical, as these actors can enable trusted outreach, help identify needs without stigma and provide ongoing support that communities alone often cannot deliver. Finally, sustained investment in energy literacy and inclusive training is needed, particularly for women and digitally excluded groups, through tailored formats, practical learning opportunities, and greater visibility of women in technical and advisory roles. Together, these measures can make energy communities more consistently accessible and help ensure they contribute meaningfully to a just and inclusive energy transition.

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GENDER4POWER

The citizens' fight against energy poverty

The role of energy communities and other citizen initiatives in Germany

WECF, October 2025

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Acronyms

BEE: Bundesverband Erneuerbare Energie: Federal Association for Renewable Energy

BBEn: Bündnis Bürgerenergie: Citizen Energy Alliance

BBEG: Bürgerenergiegenossenschaft Bergisches Land: Citizen Energy Cooperative Bergisches Land

BENG eG: Bürgerenergie-genossenschaft

CSO: Civil Society Organisation

EC: Energy Community

EnWG: Energiewirtschaftsgesetz: Energy Economy Act

EU: European Union

FEGH: Friedensfördernde Energiegenossenschaft Herford

I1: Interviewee 1

I2: Interviewee 2

JRC: Joint Research Centre

NGO: Non-Governmental Organisation

PV: Photovoltaic

SME: Small and medium enterprises

WLINTA*: Women, Lesbian, Inter, Non-Binary, Trans, Agender persons.

Introduction and methodology

Energy poverty has emerged as a pressing socio-political challenge within the European Union, particularly in light of rising energy prices, geopolitical instability, and the accelerating urgency of the energy transition. In 2023, approximately 10,6 % of EU citizens reported being unable to adequately heat their homes during winter months – a significant increase from 6,9% in 2021. In Germany, the share of households at risk of energy poverty rose from 12,5% to 25,2% between 2021 and 2022, reflecting both, structural vulnerabilities and the social consequences of global energy market disruptions[1]. These developments underscore the multidimensional nature of energy poverty, which intersects with gender, income, age, migration status, disability, and housing conditions[2].

While Germany does not legally define energy poverty, treating it instead as a subdimension of labour or income poverty, the phenomenon affects nearly one in five households[3]. The GENDER4POWER project approaches energy poverty not only as an economic hardship but also as an expression of social inequalities, reinforcing gendered and intersectional vulnerabilities. Energy Communities (ECs) and other citizen-led initiatives are increasingly being recognised as transformative actors that can address energy poverty by democratising energy production, fostering collective ownership, and enhancing social resilience[4].

Against this backdrop, this report pursues two main objectives:

- To map the current landscape of energy communities and citizen initiatives in Germany regarding their (explicit or implicit) engagement in combating energy poverty.
- To analyse the potential, limitations, and barriers of such initiatives, with special attention to gendered and intersectional dynamics.

The findings presented here are intended to contribute to a better understanding of how decentralised, community-led energy models can strengthen inclusion and resilience in the energy transition, while also providing actionable insights for policymakers, practitioners and civil society actors.

Methodology

The research design of this report is qualitative in nature and combines desk research with empirical fieldwork.

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[1] Henger, Ralph, and Maximilian Stockhausen. 2022. "IW-Kurzbericht 55/2022. Gefahr der Energiearmut wächst." Institut der deutschen Wirtschaft . Accessed 04 15, 2025. https://www.iwkoeln.de/studien/ralph-henger-maximilian-stockhausen-gefahr-der-energiearmut-waechst.html (Last Access: 22.09.2025)

[2] Habersbrunner, Katharina, Marcela Noreña Ospina, Pia Wieser, Marika Kuschan und Franziska Reichmann. *Gender-disaggregated Data on Energy Poverty: Final Study Report*. Studie im Auftrag des Europäischen Wirtschafts- und Sozialausschusses, 26. Februar 2024. EESC, Brüssel. https://www.eesc.europa.eu/sites/default/files/2024-04/qe-09-24-210-en-n.pdf (Last Access: 28.09.2025).

[3] Henger, Ralph, and Maximilian Stockhausen. 2022. "IW-Kurzbericht 55/2022. Gefahr der Energiearmut wächst." Institut der deutschen Wirtschaft . Accessed 04 15, 2025. https://www.iwkoeln.de/studien/ralph-henger-maximilian-stockhausen-gefahr-der-energiearmut-waechst.html (Last Access: 22.09.2025)

[4] Joint Research Centre (JRC). *Energy Communities and Energy Poverty: The Role of Energy Communities in Alleviating Energy Poverty.* Luxembourg: Publications Office of the European Union, 2023. https://energy-poverty.ec.europa.eu/observatory/publications/energy-communities-and-energy-poverty-role-energy-communities-alleviating (Last Access: 22.09.2025)

An initial mapping exercise was conducted using the *REScoop* database, the European federation of renewable energy cooperatives, comprising approximately 2,500 members. Applying a country filter for Germany resulted in 89 identified energy communities. Each communities' online presence was systemically analysed to determine whether energy poverty was explicitly addressed, implicitly mentioned, or absent. The analysis revealed that while five energy communities engage with energy poverty indirectly, only two explicitly identify it as part of their mission.

To gain deeper insights into the practices, perceptions and challenges of energy communities, semi-structured qualitative interviews were conducted with representatives of selected ECs and initiatives. Contact was established via email and phone, complemented by personal outreach during sector-related conferences. Four organisations confirmed the participation of interviews, representing diverse regional, organisational, and operational contexts.

Table 1: Overview of the interviewees (Source: Table created by authors)

Energy communities / citizen-led initiatives	Description
SoLocal Energy e.V. (quoted as I1)	• Citizen-led solar collective based in Kassel, Hessen • Dedicated to fostering a community-driven, decentralised energy transition with six team members • No membership fee as a collective
Energiegenossenschaft Fünfseenland (quoted as I2)	• Based in Starnberg-Ammersee region of Upper-Bavaria • Citizen-owned energy cooperative with more than 700 members • Enables residents, businesses, and local authorities to participate in developing and operating renewable energy projects - from solar PV and wind to biogas, hydropower, and geothermal systems • Membership fee: 200,00€
Friedensförderne Energiegenossenschaft Herford (quoted as I3)	• Based in Herford, Nordrhein-Westfalen • Citizen-owned energy cooperative advancing transition via solar installation and local green electricity with around 530 members • Membership fee: 250,00€
Bürgerenergiegenossenschaft Bergisches Land (quoted as I4)	• Based in Bergisches Land, Wuppertal-Arrenberg • Energy community focusing on decentralised energy production and public participation • Membership fee: 500,00€

The interviews were conducted online between June and August 2025 and lasted between 30 and 60 minutes. A semi-structured interview guide was developed, structured around four thematic dimensions were derived from the research questions:

- Approaches to energy poverty and participation opportunities

- Access to energy
- Renovation and energy efficiency measures
- Citizen empowerment, training and inclusion measures

This structure ensured comparability cross cases while allowing the exploration of individual perspectives.

Strength and Limitations of Methodology:

A key strength of this methodological approach lies in its capacity to capture lived experiences and organisational practices beyond what is available in policy documents or secondary data. It allows for in depth exploration of inclusion mechanisms and barriers for ECs. However, limitations must be acknowledged:

1. The number of Energy communities working on energy poverty, which were found in the *REScoop* network is low, restricting the breadth of case coverage.

2. Not all energy communities and citizen-led initiatives working on energy poverty have an online presence, which may have limited our findings.

3. Therefore, findings are not statistically generalisable but provide qualitative depth.

Ethical Considerations:

Ethical research standards were observed. All interviewees provided informed consent prior to participation. Participation was voluntary, and interviewees were free to withdraw at any stage without consequence.

Structure of the Report:

This report is structured into several main parts. **Section 1** contextualises energy poverty in Germany by presenting recent data, relevant definitions, and the policy framework. **Section 2** examines the role of energy communities, focusing on different dimensions such as inclusiveness and participation, access to energy, renovation and efficiency, as well as empowerment. **Section 3** synthesises the key barriers that energy communities face in addressing energy poverty. In addition, **Section 4** highlights further citizen-led initiatives that contribute to alleviating energy poverty through complementary approaches. Finally, **Section 5** outlines concrete recommendations for policymakers, municipalities, and energy communities with the aim of strengthening the role of citizen-driven energy initiatives in advancing a just and inclusive energy transition.

I/ Energy poverty and the measures to tackle it

In Germany, heating prices as well as overall living costs have risen subsequently due to the Russian invasion of Ukraine. In consequence, the percentage of households at the risk of energy poverty[5] has risen from 12.5 to 25.2 between

[5] The definition of energy poverty underlying these calculations includes all households spending over 10% of their net household income on heating, warm water and electricity. As the authors elaborate, those numbers don't necessarily reflect subjective perception and/ or coping strategies: Low-income households for example might be more prone to restricting their energy consumption (Henger & Stockhausen, 2022, p. 1f.). It is also important to

2021 and 2022[6]. This risk is calculated using the 10% rule, according to which a household is considered energy poor if it spends more than 10% of its net income on energy (heating, hot water, electricity), with additional variants taking into account income thresholds (Below 60% income or between 60-80% of the median net household income).

Government measures implemented with a specific aim towards energy poverty relief were adopted as a reaction to these geopolitical developments: The so-called energy "price brake" (Energiepreisbremse) put a price cap on electricity and heating energy for private households and SMEs from autumn 2022 until the end of 2023[7]. Additionally, an Energy cost lump sum (Energiepreispauschale) of 200-300€ was transferred to different social groups: Students and pensioners were targeted specifically as vulnerable groups, while another measure addressed people on certain transfer payments such as unemployment benefits. No gender disaggregated data were made available. Employees were also entitled to a taxable payment which thus benefited the lower tax brackets in particular. Furthermore, a total of two heating allowances were added onto student and housing grants, which are commonly received by single parents and families, as well as pensioners. Unlike the other payments, these allowances are also staggered according to household size[8].
Similar programmes exist on a municipal level, e.g., the electricity subsidy in Munich. Since there is, however, no distinct definition on the topic from the German government - instead, energy poverty is seen as a dimension of labour poverty, the issue can only be addressed indirectly through general poverty alleviation programmes such as unemployment benefits or housing allowances. Broader policy instruments such as housing subsidies and transfer payments for minimum need protection, as well as energy efficiency measures can potentially contribute to energy poverty alleviation. However, those measures do not necessarily reflect the complex intersectional structural conditions of energy poverty risk[9].
Structurally, the risk of energy poverty is especially high for households with children, the elderly, disabled and chronically ill members, low-income families, as well as single-person households. In Germany, this puts especially women and gender-diverse people, people with a migration background and young people into vulnerable positions. Further correlated factors of influence mentioned in the literature include educational attainment and building conditions, as well as the primary energy source[10].

note that conditions of energy poverty might be dynamic: As Drescher & Janzen (2021, p. 13) state, most households affected only experiences energy poverty temporarily.

[6] Henger, R., Stockhausen M. (2022): *IW-Kurzbericht 55/2022: Gefahr der Energiearmut wächst* (Cologne: Institut der deutschen Wirtschaft, 2022).

[7] Verbraucherzentrale. Energiepreisbremsen, Härtefallfonds: Die Maßnahmen der Bundesregierung, 2024. https://www.verbraucherzentrale.de/aktuelle-meldungen/energie/energiepreisbremsen-haertefallfonds-die-massnahmen-der-bundesregierung-76138. (Last Access: 25.09.2025).

[8] Bundesregierung, „Energiekosten: Zuschuss von bis zu 300 Euro," zuletzt geändert 4. Oktober 2023, Presse- und Informationsamt der Bundesregierung, https://www.bundesregierung.de/breg-de/service/archiv-bundesregierung/energiepreispauschale-2124992 (Last Access: 07.10.2025)

[9] Habersbrunner, K., Noreña Ospina, M., Wieser, P., Kuschan, M., & Reichmann, F. (2024). *Study on gender-disaggregated data on energy poverty: final study report.* Brussels, Belgium: European Economic and Social Committee.

[10] Drescher, K., & Janzen, B. (2021). Determinants, persistence, and dynamics of energy poverty: An empirical assessment using German household survey data. *Energy Economics 102*.

In relation to the energy transition, it is important to mention that energy poverty not only affects the health and wellbeing of affected households but can also exacerbate power dynamics and exclude people from participating in the energy transition[11].

Energy communities are a model that must be further explored to support households facing energy poverty. By their democratic structures as well as their potential for innovative, fair and social procedures that consider various vulnerability aspects, they are a key tool in reshaping power imbalances and involving citizens in active participation in the energy transition. Energy communities enable members to share self-generated electricity, use it collectively, store it, and sell any surplus. This model works for solar, wind, and hydropower, as well as biogas or combined heat and power plants. By participating, members can sustainably and collaboratively shape their own energy supply, reducing dependence on fluctuating and rising market prices. Their primary legislative base is the Renewable Energy Act which established feed-in-remuneration and the tender model as core mechanisms[12].

However, in Germany the legal framework around energy communities and presumptions are not easily accessible. Oftentimes, the spaces of co-determination are open primarily to those with the necessary time and financial resources as well as technological literacy[13]. These structural barriers reflect in the gender and age gap of energy community membership. According to different studies, up to 80 percent of energy cooperative members are male. Only 10 percent are under the age of 35[14]. Studies further hint at a lack of critical awareness to overcome unequal participation in many energy cooperatives[15]. Since ECs can create economic benefits for their members, this exclusion potentially even exacerbates social inequality, regarding political participation and representation.[16]

On another hand, **energy sharing** represents a great potential for energy communities in being more inclusive and in the path to the reduction of energy poverty. Energy sharing has not yet been implemented in Germany, despite strong advocacy from citizens' energy groups like Bündnis Bürgerenergie (BBEn) and Bundesverband Erneuerbare Energie (BEE) and clear frameworks existing in other EU countries like Austria and Italy.

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[11] Hanke, F., Grossmann, K., & Sandmann, L. (2023). Excluded despite their support - The perspectives of energy-poor households on their participation in the German energy transition narrative. *Energy Research & Social Science 104*.

[12] Law for the Expansion of Renewable Energies (Renewable Energy Sources Act – EEG 2023; konsolidierte Version), Climate Change Laws of the World. https://climate-laws.org/documents/law-for-the-expansion-of-renewable-energies-renewable-energy-sources-act-eeg-2021_bbdd?id=renewable-energy-sources-act-eeg-latest-version-eeg-2022_1b40. (Last Access: 25.09.2025).

[13] Schwickert, S., Strikker, P., Lautermann, C., Jaeger-Erben, M., Preis, A., & Hirschl, B. . Gelingensbedingungen für eine gerechte und inklusive „Energiewende von unten":Intersektionale und feministische Perspektiven auf Bürger*innen -Energie. Institut für ökologische Wirtschaftsforschung GmbH, 2025.

[14] Schubert, P., Benning, L., Schlüter, R., & Krimmer, H. (2025). Die Energiewende als gesellschaftliche Transformation: Potenziale der Zivilgesellschaft nutzen. Zeitschrift für das gesamte Genossenschaftswesen. https://doi.org/10.1515/zfgg-2025 0002.

[15] Vogel, M., Kacperski, C., Bielig, M., & Kutzner, F. (2024). Doing gender in energy communities: A gendered perspective on barriers and motivators. Environmental Innovation and Societal Transitions, 53, 1–15. https://doi.org/10.1016/j.eist.2024.100902.

[16] Hanke, F., Grossmann, K. et al. Excluded despite their support - The perspectives of energy-poor households on their participation in the German energy transition narrative.

The legal implementation of energy sharing is still pending in Germany, even though the EU has set clear requirements under the Renewable Energy Directive (RED II) and the more recent Electricity Directive. Some models of energy sharing are feasible when established market players are involved, such as 'WeShareEnergy', as mentioned by interviewee 3. However, bureaucratic hurdles and supplier regulations pose major obstacles for community-based groups and new entrants. Partial steps have been taken: the latest PV legislation allows community supply in buildings, and the promotion of energy cooperatives has eased organisational barriers, but true energy sharing (pooling and allocation among multiple consumers/producers) is not yet realised.

Bündnis Bürgerenergie, BBEn, alongside with other partners, has published concrete models and advocacy papers[17] to push for energy sharing in Germany, focusing on adapting national laws to ongoing EU reforms. Their positions emphasise a regional participation zone, a partial supply model to lower supplier obligations for small generators, and an energy sharing premium (e.g., 2 cents/kWh) to promote financial viability of citizen energy groups. They argue energy sharing will strengthen acceptance, local value creation, and network efficiency, and have lobbied for its inclusion in the ongoing legislative agenda.

II/ Energy communities facing energy poverty

Energy communities have the potential to meaningfully combat energy poverty by democratising energy access, lowering costs, boosting energy efficiency, and building social resilience - provided they intentionally focus on inclusion and tailored support. Despite their potential, energy communities often face challenges such as reaching the most vulnerable, overcoming upfront investment hurdles, and engaging marginalised households[18]. Involving people in energy poverty remains a complex and often underdeveloped aspect of their operation. Targeted support, policy coordination, social inclusion efforts, and collaboration with trusted local actors are vital for impact.

The analysis is structured around four main thematic areas, which are mentioned in the chapter Introduction and Methodology. By focusing on these dimensions, we aim to better understand how energy communities function not only as technical infrastructures, but also as **social innovations** that can promote justice, empowerment, and sustainability. The following sections summarise the main insights from the interviews, highlighting both enabling factors and barriers within each thematic area, while also integrating perspectives from the literature reviewed on this topic.

[17] BBEn, 2024: Positionspapier Energy Sharing; BBEn, 2023: Eckpunkte eines Energy Sharing Modells, Positionspapier; BBEn, 2021: Konzeptpapier Energy Sharing: Partizipation vor Ort stärken & Flexibilität aktivieren; IÖW, 2022: Energy Sharing – eine Potenzialanalyse.

[18] Joint Research Centre (JRC). *Energy Communities and Energy Poverty: The Role of Energy Communities in Alleviating Energy Poverty.* Luxembourg: Publications Office of the European Union, 2023. https://energy-poverty.ec.europa.eu/observatory/publications/energy-communities-and-energy-poverty-role-energy-communities-alleviating (Last Access: 18.09.2025).

a. Inclusiveness and participation measures

Reaching People Affected by Energy Poverty

Across the interviews with energy communities (I2,I3,I4), a clear consensus emerged: energy communities often struggle to reach people experiencing energy poverty. This difficulty arises from structural, organisational, and financial barriers. Firstly, energy poverty is not systematically defined or measured, making it challenging to identify and target affected households. As one expert (I2) noted, "we do not even have a working definition or adequate indicators to determine who experiences energy poverty" - a gap that hampers outreach and targeted engagement.

Moreover, energy communities often operate on a voluntary basis and may not have the personal capacity to reach vulnerable households (I3, I4). To address this, they cooperate with organisations that specifically work with these groups, such as the "Stromspar-Check" programme. However, the collaboration success depends strongly on the engagement and resources of the organisations involved.

While the potential of energy communities to address energy poverty is recognised, most are not yet structured to systematically address it. As one interviewee (I4) noted, "first of all, a cooperative serves the benefit of its members," while membership shares generally pose a financial barrier for lower-income households unless the cooperative has an explicit social focus and commitment. Consequently, without deliberate efforts, individuals experiencing energy poverty are not systematically reached.

The energy cooperative approach differs from the interviewed social initiative (I1) approach with deliberate focus on fighting energy poverty. The initial goal was to "make the energy transition possible for everyone", mainly implemented with price reduced balcony modules for low-income households. Outreach is done with occasional information evenings, sometimes organised in individual neighbourhoods or community centres, often in collaboration with climate protection managers from surrounding municipalities.

Participation of People Facing Energy Poverty

Participation of people affected by energy poverty in energy communities is rather rare, despite having some promising measures in place to broaden participation. The first measure is generally a low price for a membership share (I4, I2), paying the membership share in several instalments (I4), or even donating the shares to individuals with less financial capacities (I3).

One expert noted (I2) that "we need to think more out of the box, reaching those who don't have the money to participate as members in an energy community, but who still wish to benefit from the transition to renewable energy". The interviewee envisions an energy-sharing community as a solution and highlights the enormous potential of this model - not only to support the energy system and stabilise the grid, but also to sustainably reduce energy costs. In this way, it could contribute to greater fairness, particularly for those unable to afford their own renewable energy solutions, such as rooftop PV installations, simply because they lack the necessary capital.

Gender Balance and Representation

Interview insights suggest that gender imbalances persist in energy communities, despite the aspect often being overlooked. Measures to increase gender balance are targeted if women are represented on the board (I3, I4) and they personally address this topic. While boards striving for gender balance is effective, the women/men member ratio in both energy cooperatives (I3/I4) is around 30/70. Rarely the consideration of other genders is mentioned. One expert (I4) stresses the different approach when recruiting women compared to men, as men typically present themselves with confidence, whereas women tend to be more hesitant and need more information on expectations, topics skills and resources needed.

One expert (I4) praised plug-in balcony modules to attract more women. While the original founding of the energy community was rather seen technical, targeting wide production plants and male driven, the development to plug-in solar was a key entry point for women as a more grabbable technology to dive into energy transition topics. On another hand a second expert (I1) points out that balcony solar systems are predominantly implemented by men. Consequently, male voices dominate online platforms documenting these projects, such as YouTube. This gendered pattern of participation perpetuates the marginalisation of women, as discussions, knowledge exchange, and practical engagement tend to be concentrated within male-dominated, technically oriented networks. Such dynamics highlight broader structural barriers to inclusive participation in decentralised renewable energy initiatives.

A further remarkable initiative is carried out by the social initiative interviewed (I1), which actively creates spaces for women and marginalised gender identities, including non-binary and transgender individuals, to gain access to skilled technical crafts. These spaces also serve as forums for exchanging strategies on navigating the male-dominated crafts sector. Initiatives include one-day or evening workshops and, for example, a two-day solar camp held this summer. For the first time, this camp was exclusively open to participants from these underrepresented gender groups.

Interviewees emphasised the need to improve gender and social equity in energy transitions, highlighting intersectional challenges. Starting with programmes lacking gender-disaggregated and intersectional data without almost exception, making energy-poor groups "invisible" in design and evaluation. This leads to definitions of "vulnerable consumers" that are often too narrow[19]. Due to resources and time energy communities often do not have the possibility to develop their own programme and definition on their geographical level of action. This induces as well that energy communities often reproduce sectoral gender and intersectional gaps (male-dominated leadership/technical roles, elite class), meeting cultures that ignore care burdens/time poverty, inaccessible venues, and language barriers.

[19] Habersbrunner, K., Noreña Ospina, M., Wieser, P., Kuschan, M., & Reichmann, F.: Study on gender-disaggregated data on energy poverty: final study report. Brussels, Belgium: European Economic and Social Committee, 2023.

Both the interview data and EUCENA findings underscore the male-dominated structures and enduring gendered barriers in energy communities[20]. Efforts such as targeted workshops, board representation, and policy reforms are underway, but penetration remains uneven and dependent on local leadership and awareness. Intersectional issues, including energy poverty and the unique challenges faced by non-binary and transgender individuals, require more systematic strategies and inclusive outreach practices. Creating dedicated learning and networking spaces for marginalised genders, integrating gender equality into operational policies, and raising awareness among male actors emerge as crucial steps for a just and gender-balanced energy transition.

b. Access to energy

Despite the growing number of energy communities in Germany, the actual distribution of energy generated by these communities remains shaped and constrained by legal and structural conditions. This has particularly strong implications for the inclusion of vulnerable households.

Energy Distribution Today: Selling to the Grid, Not to the People

A recurring theme across all three expert interviews (I2,I3,I4) is the fact, that under current German regulation, **energy communities cannot directly distribute the electricity they generate to their own members**. Instead, energy produced by photovoltaic panels or wind turbines is injected into the public grid and sold via feed-in tariffs or direct marketing contracts. Often energy cooperatives are not operating as energy suppliers themselves but selling their electricity to them (I3,I4). This means that they have no control, if the energy suppliers offer special rates for energy poor households. Furthermore, the question was raised, that even if the energy supplier is willing to support energy-poor households, it still faces the challenge of obtaining the necessary data and documentation to identify them (I3).

In conclusion this means that members of energy communities do not receive the electricity itself but rather a share of the financial returns generated from selling it. These profits are usually distributed in the form of dividends, proportional to the number of shares held. Consequently, participation remains largely financial and is typically accessible to individuals with sufficient disposable income to purchase cooperative shares, often several hundred euros.

For people in energy poverty, this model presents clear structural barriers. Households struggling to pay their energy bills are unlikely to invest in a renewable energy cooperative, especially when they cannot directly benefit from reduced energy costs.

The so-called "tenant electricity model" enables tenants in multi-apartment buildings to consume solar energy generated on-site, allowing a form of direct local energy sharing with reduced electricity tariff (I2). However, this approach is not a

[20] Kaur, S., Groneweg, K., Habersbrunner K.: Gender Survey of Energy Cooperatives. A Summary with Recommendations (Version 1.0). EUCENA/EUKI/WECF, 2022. https://www.euki.de/wp-content/uploads/2022/11/EUCENA_Gender-Survey-of-Energy-Cooperatives.pdf (Last Access 25.09.2025).

core focus of broader energy community practices and remains largely confined to specific building projects rather than community-wide distribution.

Moreover, for surplus energy - understood either as physical overproduction or as unexpected financial gains from high market prices - there is in general no guarantee that this additional income will be redistributed in a socially targeted way as cooperatives think first about higher dividends or reinvestment opportunities in new infrastructure. But one expert (I4) stated that the gains of surplus energy were divided into roughly three parts: reinvestment, member dividends, and the donation of plug-in solar systems to a social cause.

These kind of solidarity-based practices such as donating solar modules to social institutions, offering a small number of gifted shares to individuals with less investment capacities, or working together with social institutions like "Stromsparcheck" who have access to structural vulnerable households are currently the main entry points for energy communities to improve the lives of people affected by energy poverty.

The Future Potential of Energy Sharing

Despite the current limitations of the energy system, interviewees expressed cautious optimism about future developments, especially in light of the EU Renewable Energy Directives (RED II)[21], which explicitly promote the concept of **energy sharing** (I2,I3,I4). **Energy sharing** refers to the possibility for an energy community to jointly use their produced energy (RED II, Art. 22.2). This provision grants renewable energy communities the right to

- share energy within a defined area,
- share within the members of the renewable energy community,
- share the renewable energy produced by production units owned by that community.

The European Union's RED II Directive (2019) and Electricity Directive require member states to enable energy sharing, with Germany continually missing transposition deadlines. As of August 2025, the new CDU/CSU and SPD coalition has signalled technology-neutral and market-oriented energy reforms, reiterating the climate neutrality target and promising further expansion of renewables, but the exact roadmap for energy sharing remains vague. The new draft of the Energiewirtschaftsgesetz (EnWG) in August 2025 includes energy sharing for the first time, which is seen as a basic step forward by citizen energy players. However, the draft is still insufficient for truly enabling robust citizen energy and cooperative models.

While Germany has not yet fully transposed these provisions into national law, there is growing momentum for enabling communities to distribute locally generated electricity to participating households, beyond the rigid boundaries of supplier status.

In this context, energy sharing refers to the virtual allocation of renewable energy across a defined group of users based on smart metering and digital infrastructure.

[21] European Union. DIRECTIVE (EU) 2018/2001, December 2018. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001. (Last Access: 01.10.2025).

One expert (I2) described this as a "game changer", explaining that it supports the energy system and stabilises the grid. It also reduces energy costs through a more "market economy" approach, which involves reducing grid fees through smart flexibility mechanisms and intelligent grid use and expansion. In future, municipalities could play a further critical role in this system because citizens are familiar with and identify with their municipalities. Energy cooperatives could operate at the distribution grid level for municipalities, generating energy and facilitating local energy sharing. In this way, energy sharing could contribute to greater fairness, **particularly for those who cannot afford their own renewable energy solutions.**

Moreover, energy sharing offers a variety of substantial advantages. It **lowers grid and infrastructure costs** as consuming power locally reduces the need for costly grid expansion, minimises transmission losses, eases congestion on the grid and lowers overall infrastructure costs. It also, **enhance consumer participation**. Energy sharing schemes enable individuals, small businesses, and municipalities to actively participate in the production, sharing, and consumption of renewable energy. This can encourage local investments in clean energy and boost social acceptance of renewable energy installations. In addition, consumers benefit from **financial savings and flexibility generated by** electricity prices by using shared or surplus renewable energy, especially compared to conventional supply contracts or wholesale markets. Producers (such as households with solar panels) can also earn more by selling excess power directly to neighbours, making installations more attractive.

Finally, energy sharing is an opportunity for greater **social inclusion and accessibility** at a local level. It makes the benefits of renewable energy accessible to broader groups, including tenants, low-income households, and those lacking the ability to install their own systems. This helps to combat energy poverty and improve social equity.

In preparation for a future legal framework in Germany, energy communities are getting ready. Experts (I3, I4) referred and are starting to use promising pilot model/platforms for energy sharing designed to digitally prepare energy communities for energy sharing (I3).

Overall, the current model of energy distribution structurally limits energy communities' ability to support households in energy poverty. Upcoming legal reforms to finally allow energy sharing in the near future present the opportunity to shift systematically towards more inclusive practices.

The comparison to Austria and Italy demonstrates the feasibility and impact of energy sharing and how it can be incorporated into existing energy markets. Both countries have implemented legal frameworks for energy sharing since the EU RED II deadline. In Austria, consumers benefit from energy communities thanks to simplified regulatory structures, premium models, and accessible one-stop shops for setup. Participation in energy sharing is widespread in these countries, allowing easier pooling, consumption, and local trading of electricity. Germany's

delay means that citizen groups must wait for legislative clarity and miss out on the full benefits currently enjoyed in neighbouring EU states[22].

While the draft Energiewirtschaftsgesetz (EnWG) is a milestone in finally defining and allowing energy sharing in Germany, improvements are needed to unlock the full social, economic, and ecological potential of energy sharing led by citizens and cooperatives[23].

c. Rehabilitation and energy-efficiency

Energy poverty is closely linked to the condition and efficiency of the housing stock. Poorly insulated buildings, outdated heating systems and inefficient energy use, lead to high energy bills, insufficient indoor comfort, and increased health risks - particularly affecting low-income households[24]. Energy-efficient renovation, such as the insulation of facades, roofs and basement ceilings, the replacement of windows and doors, and the upgrading of heating and ventilation systems, address these structural causes. By reducing energy demand at its source, renovation measures contribute not only to climate mitigation, but also to lowering housing costs and strengthening resilience against energy price fluctuations. In districts, where much of the building stock predated modern efficiency standards, the potential impact of such measures is especially high[25].

In this context, energy communities and cooperatives can play a crucial role. While their primary activities often focus on the generation and distribution of renewable energy, their local anchoring, member-driven structures, and advisory function position them as important intermediaries in mobilising and organising renovation processes[26]. They can act as trusted actors within their communities, help coordinate fragmented ownership structures, and link households to technical expertise and financing opportunities. Their social orientation gives them the potential to address vulnerable groups who are most likely to be affected by energy-poverty but are often excluded from conventional renovation schemes[27].

Nevertheless, engaging in renovation activities presents challenges for energy communities. Renovation projects are typically complex, capital-intensive, and heavily dependent on political and regulatory frameworks[28]. For smaller, citizen-

[22] Roland, T.; Theesfeld,V.;Zieher,M. (im Auftrag des Bundesverbandes Bürgerenergie). *Umsetzungsstand von Energy Sharing in der EU*. Übersetzt durch BBEn. 2023 (Originalpublikation). https://www.buendnis-buergerenergie.de/fileadmin/user_upload/Umsetzungsstand_von_Energy_Sharing_in_der_EU.pdf. (Last Access: 28.09.2025).

[23]Bundesministerium für Wirtschaft und Klimaschutz, *Gesetzentwurf zur Änderung des Energiewirtschaftsgesetzes (EnWG-Novelle 2025). Kabinettsvorlage*, 6. August 2025. https://www.bundeswirtschaftsministerium.de/Redaktion/DE/Downloads/Gesetz/2025/20250806-gesetzentwurf-aenderung-enwg-novelle-2025-kabinettsvorlage.pdf. (Last Access: 25.09.2025).

[24] Birgi, O.G., Fuhrmann, A., Habersbrunner K., Stock, A.: Gender and energy poverty – Facts and arguments. EmpowerMed Factsheet, WECF, 2021.

[25] Joint Research Centre (JRC). *Energy Communities and Energy Poverty: The Role of Energy Communities in Alleviating Energy Poverty.* Luxembourg: Publications Office of the European Union, 2023.

[26] Hanke, F., Grossmann, K., & Sandmann, L. (2023). Excluded despite their support - The perspectives of energy-poor households on their participation in the German energy transition narrative. *Energy Research & Social Science 104*, 1-13.; JRC 2023 ibid.

[27] Joint Research Centre (JRC). *Energy Communities and Energy Poverty: The Role of Energy Communities in Alleviating Energy Poverty.* Luxembourg: Publications Office of the European Union, 2023. https://energy-poverty.ec.europa.eu/observatory/publications/energy-communities-and-energy-poverty-role-energy-communities-alleviating. (Last Access: 01.10.2025).

[28] European Commission. Commission Recommendation (EU) 2023/2407 of 20 October 2023 on energy poverty. Official Journal of the European Union, OJ L. ELI: reco/2023/2407.

led organisations, these barriers often exceed their current capacities. National and municipal support programmes (e.g., the German "Bundesförderung für effiziente Gebäude" or Munich's "Klimaneutrale Gebäude" programme) provide an important framework, but they remain difficult to access without technical and organisational support structures. This creates a situation, where **energy communities acknowledge the importance of renovation for tackling energy poverty but do not yet see it as a core field of activity to prioritise**.

All interviewees acknowledged the relevance of energy efficiency measures in the context of the energy transition. However, none of the interviewees have undertaken any renovation measures so far (I1; I2; I3; I4). Instead, the primary role of the cooperatives was described as the generation and distribution of renewable energy, as well as advisory or intermediary functions within their networks. Renovation measures, by contrast, were perceived as technically and organisationally complex. This assessment became particularly evident in the case of the Energiegenossenschaft Fünfseenland (I2). Following a study that was conducted to evaluate the renovation needs of existing buildings within a municipality, the cooperative aimed to estimate future heating demand after potential renovation measures, with the goal of developing a local heating network. However, several barriers were identified, which are addressed later in the chapter *Main barriers faced by energy communities fighting energy poverty,* among them being the over complexity of such project.

Another key theme that emerged from the interviews was the strong dependence on political and planning frameworks. This became particularly evident in the case of Friedensfördernde Energiegenossenschaft Herford (I3), which expressed an interest in becoming actively involved in the field of municipal heat planning. The respondent identified this instrument as strategically relevant, as it could serve to guide future renovation efforts. However, uncertainties were noted regarding the timeline and concrete implications of these planning processes. As the municipality is still in the early stages of developing heat plans, those involved are currently adopting a wait-and-see approach to initiating renovation projects. An additional challenge raised by the community concerned competition for profitable renovation projects. It was assumed that larger, more established market players are often favoured when such projects are awarded or initiated due to their greater financial and organisational resources. This perception points to structural barriers and unequal market opportunities for smaller, citizen-led organisations.

Finally, another aspect was also emphasised by the citizen-led initiative SoLocal e.V. (I1), describing their desired focus on existing priorities as a reason for not engaging in renovation activities. The collective stated that they would prefer to continue carrying out their core activities, such as educational programmes and the installation of balcony modules and photovoltaic systems, to a high standard of quality, rather than broadening their scope to include additional activities, which, due to limited capacity, could not be implemented to the same qualitative standard (I1).

In summary, energy renovation currently appears to be viewed by the interviewed energy-communities and citizen-led initiatives as a complementary or long-term

field of activity rather than a short-term priority. This willingness is constrained by significant external barriers, such as condominium ownership structures, high financial costs, unequal market opportunities, or requirements set by municipalities.

The current reluctance should therefore not be interpreted as a lack of interest, but rather as a reflection of the political, structural and market-related conditions that severely limit implementation capacity. The future role of these actors in the field of energy-efficient renovation will largely depend on their integration into local planning processes and the extent to which targeted support mechanisms are put in place to expand their future scope to action.

d. Citizen empowerment and training

Training programmes are a cornerstone of energy communities, focusing on sustainable energy-use, energy efficiency and renewable technologies.

Increasingly, scholars and practitioners emphasise that such programmes cannot remain gender-neutral if they aim to be truly inclusive. Research shows that energy communities often reproduce existing gender inequalities when participation is mediated by technical knowledge, time availability, or socio-economic background, which disproportionately disadvantages women and other underrepresented groups[29]. To counteract this, a gender-sensitive approach to capacity-building measures, including targeted training, workshops, mentoring, has been identified as essential for fostering inclusive and participatory energy communities[30].

The SCCALE's Inclusivity Guidebook for Energy Communities highlights that participatory learning environments, gender aware facilitation, and adapted workshop formats are crucial for ensuring that empowerment efforts reach beyond the "usual suspects" and actively engage WLINTA*, and other structurally vulnerable groups[31]. Similarly, research in the broader energy sector confirms that gender-focused mentoring and networking structures can significantly improve participation in energy related decision-making[32].

In this sense, training efforts in energy communities and citizen-led initiatives are not only about transferring technical knowledge; they are also instruments of social innovation, shaping who has access to energy citizenship and decision-making power. **Workshops that deliberately address gender imbalances, for instance by creating women-only learning spaces or WLINTA*-specific solar camps, illustrate how gender-sensitive design can promote agency in traditionally male-dominated fields**. In turn, these approaches provide

[29] Fraune,C. A Gendered Perspective on Energy Transformation Processes, in *Handbook of the International Political Economy of Energy and Natural Resources*, ed. Andreas Goldthau, Michael F. Keating, and Caroline Kuzemko (Cheltenham: Edward Elgar, 2018).
[30] Van Veelen, Bregje, Eadson,W. Assembling Community Energy Democracies. "*Voluntary Sector Review* 11, Nr. 2 (2020) 249. https://doi.org/10.1332/204080520X15886945285027.
[31] SCCALE 20-30-50, *Inclusivity Guidebook for Energy Communities* (Brüssel: SCCALE 20-30-50, 2024), https://energycommunityplatform.eu/wp-content/uploads/2024/02/Inclusivity-Guidebook_SCCALE203050_updated.pdf. (Last Access: 01.10.2025).
[32] Lazoroska, D. Gender-based opportunity structure in the energy sector: A literature review on women's networking and mentoring, *Energy, Sustainability and Society* 14 (2024): 67, https://doi.org/10.1186/s13705-024-00494-9.

evidence that citizen empowerment and gender equality can reinforce each other as mutually constitutive goals of the energy transition.

In practice, interviews offered a nuanced picture of how energy communities and citizen-led initiatives address inclusivity and participation through a variation of capacity-building design and scope.

Ranging from informal discussion formats to strategically planned training programmes, interviews conducted reveal differing approaches. For example, BBEG (I4) focus on easy informational formats, such as regular meetups or participation in public events. These formats primarily serve to raise awareness and provide general information rather than offering structured knowledge transfer or targeted empowerment.

Furthermore, SoLocal (I1) and Fegh (I3) have implemented concrete and publicly accessible workshops, including current topics like municipal heating planning or balcony PV systems. A notable example is a gender-specific workshop for women by Fegh (I3), focused on the installation of balcony PV systems. This initiative, organised in cooperation with local partners and supported by the municipal climate protection office, illustrates how hands-on formats can foster technical empowerment and promote active participation in energy transition processes.

The citizen-led initiative SoLocal (I1) takes an even more comprehensive approach by systematically integrating education into its activities through an intersectional and structural empowerment framework. A wide range of formats, from climate education in kindergartens to career orientation programmes and WLINTA*-specific Solar Camps are used to build long-term empowerment structures, particularly for underrepresented groups in the energy sector. Special attention is given to create gender-sensitive spaces within traditionally male-dominated fields such as skilled trades.

Others are still undergoing internal organisational restructuring or are in a planning phase. Nevertheless, most of the communities have formulated explicit future objectives, such as the engagement of young people and targeted inclusion of girls in a planned student-run energy cooperative.

An additional component of successful training work is the openness to non-members. Two of the interviewees (I1,I3) point out that broad societal engagement through publicly announced events not only facilitates knowledge transfer but also expands outreach to new target groups, such as low-income households or individuals with limited access to education, even though reaching these groups remains a recognised challenge.

It is interesting to add, as the REScoop and WECF's Gender Survey of Energy Cooperatives highlights, that **cooperatives which actively address gender dimensions, not only improve internal participation and governance structures, but also expand their societal reach and legitimacy**. It underlines that gender-inclusive practices, such as targeted trainings, inclusive communication strategies, and mechanisms to ensure diverse representation, can strengthen social innovation within ECs, thereby enhancing their transformative capacity in the energy transition. Where gender-just education is understood as a

strategic tool, it can make significant contribution to democratising the energy transition - both by strengthening individual agency and fostering social inclusion and participatory governance[33].

e. Case study of an energy community

In Germany, energy communities that actively address energy poverty remain relatively scarce. However, the energy cooperative **Bürgerenergie-genossenschaft, BENG eG**, based in Munich, commits since many years to social justice, gender equity, and inclusive participation in the energy transition.

BENG eG's vision is clear: *"We need an energy transition that includes everyone – socially just, ecologically sensible, and carried out in solidarity."* This guiding principle shapes their activities and engagement with local communities since the establishment in 2011.

To support this mission, BENG eG shares accessible information on energy-saving strategies and organises multilingual workshops focused on balcony solar modules in German, English and Spanish. Further languages have been offered but were not used until now. These workshops are designed to reach diverse target groups, including low-income households and non-German speakers. In order to lower financial barriers to participation, the cooperative has introduced a lottery system in some workshops where participants can obtain a free cooperative membership.

The cooperative has also launched communication campaigns specifically aimed at addressing a broad range of audiences and breaking down barriers to entry. In addition, the membership fee is €100, a sum that is more manageable for households with limited financial means.

BENG eG prioritises gender equity within its structure. They actively work to increase the proportion of women involved and is an energy cooperative reaching the one of the best women/men equal representations in the country (30% women, 66% men, no other genders data are collected). They also attract a diversity of age group through their communication campaigns (see table below). Therefore, BENG eG has strategic cooperations with gender, women's and social organisations.

[33] REScoop.eu, WECF, *Gender Survey of Energy Cooperatives – A Summary with Recommendations* (Brüssel: REScoop.eu, 2022), https://www.rescoop.eu/toolbox/gender-survey-of-energy-cooperatives-a-summary-with-recommendations.

Figure 1: BENG members by year of birth

In the past, they have implemented tenant electricity (Mieterstrom) projects in multi-family buildings - an approach they plan to expand, especially to benefit vulnerable households in the future.

The overall portfolio of BENG is clustered into three main types: Full feed-in, direct consumption, and tenant electricity projects. Full feed-in projects are the largest installations, often ground-mounted, while direct consumption projects are typically rooftop systems on municipal or community buildings. Tenant electricity projects provide clean energy directly to residents, promoting local sustainability. Many installations are built on schools, kindergartens, and community centers, highlighting the social impact of the portfolio. Overall, this mix demonstrates a balance between maximising energy production and supporting local communities. The following table summarises the portfolio:

Table 2: PV Portfolio of BENG split up in Type Full Feed-In, Direct Consumption, Tenant Electricity (Source: Table created by authors, data from BENG)

Project Type	Number of Projects	Total Capacity (kWp)	Total Investment (€)	Average Capacity (kWp)	Average Investment (€)
Full Feed-In Direct	9	1,783	2,902,006	198.11	322,445
Consumption (with excess Feed-In)	14	928	1,034,096	66.29	73,864
Tenant Electricity	5	309	393,226	61.80	78,645

III/ Main barriers faced by energy communities fighting energy poverty

Energy communities are increasingly recognised as key actors in addressing energy poverty, particularly by fostering decentralised renewable energy production and strengthening local participation[34]. Despite their transformative potential, these ECs and citizen-led initiatives face a series of hurdles that limit

[34] European Commission, *Recommendation (EU) 2020/1563 on tackling energy poverty* (Brussels: European Commission, 2020), https://energy.ec.europa.eu/topics/markets-and-consumers/energy-consumers-and-prosumers/energy-poverty_en. (Last Access: 01.10.2025).

their effectiveness. Based on literature and conducted interviews, several recurring topics and specific challenges can be identified. These findings shed light on both structural and context-specific barriers to community-led action against energy poverty.

a. Barriers to creating inclusivity and participatory measures

The JRC (2023) report underscores that technical and organisational challenges severely limit their inclusivity, especially regarding gender-just models and engagement with marginalised groups. A lack of understanding at the local level, combined with limited time and resources, hampers the democratisation of community energy models that are inclusive by design. Energy communities often lack the capacity to intentionally design processes that effectively engage traditionally excluded groups. This gap perpetuates exclusion and undermines broader participation[35]. Similarly, the interviewees highlighted a range of structural and practical barriers to inclusiveness and participation.

First, the **academic framing** of "energy poverty" itself was identified as a challenge. Interviewee 1 stressed, the terminology renders the issue inaccessible to many affected groups. Similarly, **bureaucratic obstacles** were also noted regarding data collection and privacy. The Friedensfördernde Energiegenossenschaft (Fegh) described difficulties in reaching individuals in energy poverty, exacerbated by requirements such as income verification. Interviewees stressed the difficulty of identifying households in need, since procedures for verifying income or poverty status are both administratively demanding and socially sensitive. As one respondent from Fegh observed:

"Data availability is also interesting. Who is really poor? How is the proof of need made? I think that would also be another point. Do we say it is those who receive 'Bürgergeld[36],' and that one asks for proof? That is another issue".

Gender inequalities were explicitly mentioned by several interviewees. The overrepresentation of men in energy communities itself constitutes a barrier for women to engage. As two of the interviewees observed, some women are reluctant to join initiatives if they do not already see other women participating. This dynamic reproduces exclusionary patterns and hinders more balanced representation. Similarly, Fegh (I3) noted that traditional gender roles reduce women's participation, as women are still more often expected to stay at home, take primary responsibility for childcare, and manage household duties, while the BBEG underscored that technical expertise is still largely associated with male-dominated knowledge domains. These insights resonate with existing research,

[35] Joint Research Centre (JRC). *Energy Communities and Energy Poverty: The Role of Energy Communities in Alleviating Energy Poverty.* Luxembourg: Publications Office of the European Union, 2023. https://energy-poverty.ec.europa.eu/observatory/publications/energy-communities-and-energy-poverty-role-energy-communities-alleviating. (Last Access: 01.10.2025).

[36] Bürgergeld is Germany's basic income support for people who are unemployed or have very low income. It replaced Hartz IV in 2023 and is meant to ensure a minimum standard of living while helping recipients find work or improve their skills through training and education.

which has shown that gendered access to energy initiatives and leadership positions remains limited[37].

Financial requirements were repeatedly mentioned as a structural barrier to access membership of an energy community. Energy communities often require an **initial financial investment** in shares, which is inaccessible to people in precarious economic situations. Similarly, the interviewee from Fegh pointed to **legal restrictions** that limit their ability to provide alternative access models, such as vouchers or volunteer-based contributions:

"The legal component was also an issue. It is not that easy, in terms of cooperative law, to assign voluntary work or to issue any kind of vouchers, if I may put it simply".

Interviewees emphasised the tension between economic viability and the willingness to support vulnerable households. Several respondents referred to a "gap" between the profit orientation required for survival and the social mission of providing affordable access to energy. This tension became especially visible in the accounts of Energiegenossenschaft Fünfseenland (I2), whose representative explained that their cooperative, originally founded on a voluntary basis, is currently undergoing a process of professionalisation. While the long-term mission remains to ensure affordable access to energy, immediate priorities lie in securing an economic basis—such as generating sufficient revenues to pay staff fairly and create stable employment opportunities. As the interviewee explained:

"[...] *Then you try to prioritise things that move us forward economically and secure the basis to say: we have employees who want to be normally paid and not just take a mini-job while working full-time*".

Finally, **lack of awareness and communication** also play a role. Households affected by energy poverty are rarely the target audience of EC outreach efforts, leaving many unaware of the concept or perceiving it as "not for them". Stigma and social distance reinforce this perception, as people experiencing energy poverty may view community energy initiatives as elite or overly technical, further deterring engagement.

b. Barriers in providing affordable access to energy to everyone

Access barriers that hinder energy communities from enabling fair and affordable access to energy are deeply rooted in **administrative and procedural complexity.**

Cumbersome metering systems, supplier switching, and intricate grid regulations require not only significant time investments but also digital literacy and confidence in navigating bureaucratic systems. These requirements

[37] Clancy, J.,Feenstra M. *Gender in the Transition to Sustainable Energy for All: From Evidence to Inclusive Policies* (ENERGIA International Network on Gender and Sustainable Energy, 2017), https://www.energia.org/assets/2019/04/Gender-in-the-transition-to-sustainable-energy-for-all_-From-evidence-to-inclusive-policies_FINAL.pdf. (Last Access: 01.10.2025).

disproportionately exclude individuals with limited digital access or lower administrative familiarity, including older adults and people with migration backgrounds[38].

Moreover, **regulatory complexity** emerged as a central theme across all interviews. Both, Energiegenossenschaft Fünfseenland and Bergische Energiegenossenschaft (BBEG) emphasised the absence of a clear legal framework for **energy sharing**, which they considered a critical obstacle to broader social inclusion in renewable projects. This finding resonates with broader research, where the lack of enabling regulation on energy sharing has been identified as a significant constraint for energy communities[39].

In addition, interviewees highlighted the **lack** of consistent and mandatory efforts by national and local authorities to collect **gender- and intersectional-disaggregated data to define energy poverty at the local level**. Without such data, energy communities have limited capacity to develop diversity- and inclusivity-oriented methodologies. This gap particularly constrains their ability to address the needs of marginalised groups who are disproportionately affected by energy poverty.

The financial investment that is sometimes required through energy community can also be a disadvantage for low-income households. As one SoLocal representative explained:

"*The structural obstacles we repeatedly see lie in the fact that private energy independence or even autonomy in renewable energy comes with very high up-front investments and then very low operating costs, often no operating costs at all, except maybe replacing an inverter after 15 years. But this high initial investment is, of course, hard to manage. And it is the same with heating, with heat pumps or even renovation*."

c. Rehabilitation and efficiency

Regarding the implementation of renovation and energy efficiency measures, central issues were raised by the interviewed energy communities and citizen-led initiative, which limit access to energy-efficient housing and thus hinder the alleviation of energy poverty.

First and foremost, **financial hurdles** represent a significant burden in this regard. For instance, the citizen-led initiative SoLocal (I1) highlighted, that even small-scale interventions, such as the installation of solar balcony modules, can be prohibitively expensive for households with limited resources. As a potential countermeasure, they suggested mandatory provision for landlords, such as an obligation to install rooftop or balcony systems, to ensure that tenants are not left to shoulder these costs alone (I1). SoLocal further underlined the difficulties in securable funding, pointed to a rejected application for the *Sanierkreis*

[38] Joint Research Centre (JRC). *Energy Communities and Energy Poverty: The Role of Energy Communities in Alleviating Energy Poverty.* Luxembourg: Publications Office of the European Union, 2023. https://energy-poverty.ec.europa.eu/observatory/publications/energy-communities-and-energy-poverty-role-energy-communities-alleviating. (Last Access: 01.10.2025).
[39] REScoop.eu, *Annual Report 2021* (Brüssel: REScoop.eu, 2021), https://www.rescoop.eu/uploads/REScoop-Annual-Report-2021.pdf. (Last Access: 01.10.2025).

programme, and stressed that the high upfront investments required for renewable technologies, such as heat pumps or comprehensive building renovations – remain a major barrier for private households.

In addition to financial constraints, structural barriers were repeatedly emphasised. One of the cited obstacles was the *"Modernisierungsumlage",* a regulation that allows landlords to pass up to 8% of the modernisation costs on to tenants. However, what is included into "Modernisation" is not defined. This leads to the cases where owner engage into "beauty renovation" that are not specifically energy efficient but increases housing costs and thus aggravates the risks of energy poverty instead of easing the financial burden of energy efficiency. Moreover, ownership structures, particularly in larger property-holding companies, were described as problematic. Diverging interests between tenants and property owners often result in inertia or a lack of willingness to provide affordable access to energy, as illustrated by the case of the aimed cooperative of Fünfseenland in Chapter 3.3. They also further emphasised the challenge posed by property owners' associations, which can block or delay renovation efforts.

The interviews also revealed several **administrative and organisational challenges**. Fegh (I3) pointed to the procedural requirements of cooperative law, where general assembly approval is needed for key decisions, considerably slowing down implementation. Collaboration with other initiatives was described ambivalently. While it can foster synergies and networking, it also risks duplication of work, delaying processes, and limiting access to particularly vulnerable groups (I1). In the case of Energiegenossenschaft Fünfseenland, additional bureaucratic demands arose from interactions with the municipality. After receiving study results that showed the immense **financial effort** needed to bring the existing building stock up to modern efficiency standards, the cooperative concluded that the required investments exceeded its financial capacities (I2). At the same time the municipal requirement to develop a comprehensive energy concept was perceived as an administrative burden that went beyond the cooperative's available resources. In consequence, unresolved questions regarding responsibilities emerged as an overarching issue. In the development and implementation of integrated energy concepts, it remained unclear which actors, municipalities, cooperatives or private property owners, should assume the lead. This lack of clarity creates a grey zone of accountability, with the result that renovation projects fell outside of the direct sphere of influence of the energy community.

d. Empowerment and training

Compared to other areas, interviewees identified comparatively fewer barriers related to empowerment and training, and, in general, a strong willingness to engage in this field. At the same time, respondents consistently pointed to time as the most critical missing resource. Where time and capacity are available, measures to strengthen inclusiveness through capacity building and training were considered feasible. In this respect, the activities of SoLocal were highlighted as a good-practice example, given their broad programme of training opportunities aimed at empowering communities.

Capacity building and training initiatives, as well as the development of inclusive processes, are often constrained by the necessity of maintaining financial

sustainability (I2). As a result, efforts to develop inclusive empowerment measures may be deprioritised in favour of stabilising the organisation's economic foundation, which can shift attention away from purely social objectives.

These findings align with broader research, which stresses that without targeted regulatory reforms, financial support mechanisms, and inclusive governance structures, energy communities will struggle to realise their full potential in combatting energy poverty[40].

Finally, interviewees drew attention to contextual and financial risks. Energy communities are dependent on weather conditions, which can undermine stable access in years with limited solar yields. Moreover, up-front costs, such as membership shares, pre-financing for PV or efficiency measures, and credit checks, systematically exclude low-income households, renters, undocumented people, and those with debt histories. As noted, conventional schemes rarely embed gender-just access rules, further entrenching inequalities in access to energy community.

IV/ Other citizen initiatives

The topic of energy poverty is addressed by several non-governmental initiatives. Often, those are part of a broader civil society institution working on either poverty relief or climate protection. Many of them work on political-advocacy levels as well as offering concrete measures for people acutely affected by energy poverty and debt. Collaboration with energy communities is still rare due to lack of resources of civil society organisations, as well as lack of funding and clear data and definition of vulnerability and energy poverty categories at municipal level (I1, I2, I3, I4).

Several replicable initiatives exist in Germany and have potential to cooperate with energy communities or act standing alone against energy poverty. However, no data on their effectiveness were available at this stage.

In Karlsruhe, Ingelheim and Munich, the concept of Energie cafés emerged. Based on the concept of language cafés, they offer a place to exchange experiences around a cup of coffee or tea and have an open conversation about energy. In Munich, the 'Energie Cafés Neuperlach', organise safe spaces, free of charge, to discuss topics such as understanding an energy bill and energy rights, citizen solar initiatives, renovations, energy justice, gender-energy nexus, etc. Training sessions and co-creation sessions are also held. Some participants already have a lot of experience on some topics and want to exchange experiences and hear what is happening in their neighbourhood. Others have a very specific question that they need support with. They offer the space for energy communities to present themselves, involve traditionally excluded people into the topic, discuss solutions to become members, find new rooftops, etc. This was the case of the newly created

[40] Joint Research Centre (JRC). *Energy Communities and Energy Poverty: The Role of Energy Communities in Alleviating Energy Poverty.* Luxembourg: Publications Office of the European Union, 2023. https://energy-poverty.ec.europa.eu/observatory/publications/energy-communities-and-energy-poverty-role-energy-communities-alleviating. (Last Access: 01.10.2025).

Energiegemeinschaften München, that joined the Energie Café organised by WECF and KulturBunt Neuperlach in October 2025.

Another example comes from the non-profit association Verbraucherzentrale Bundesverband (Federation of German Consumer Organisations). It offers general advice and counselling on poverty and debt, energy saving and dealing with energy debt online as well as consultation services in most federal states. Furthermore, the online contents are available as text or audio and sometimes, letter templates are provided, extending the service offer and making it more accessible. In terms of policy work, energy poverty is targeted under the general context of current price increases as well as cost distribution in the electricity market and energy and energy-efficient renovations.

Similarly, Stromspar-Check (Energy Saving Check) is a project led by Caritasverbund e.V. and the Federal Association of Energy and Climate Protection Agency (eaD). Since its beginning in 2008, the initiative has been funded by emission certification trade via different Federal Ministries since it offers free counselling and energy-saving check for low-income households to help participants cut down their electricity, water and heating costs. If eligible, free products and subsidies for small renovation measures may also be granted. Employees often have a background of being long-term unemployed and receive training to work in counselling.

Additionally, there are different CSOs and tenants' associations working in the area of policy recommendations, research reports and studies, providing a scientific base for informed and fair policymaking. In this sense, the Deutscher Mieterbund e.V. (German tenant's association) advocates for socially just and financially accessible efficient renovations for tenants. Another institution worth mentioning in this context is Öko-Institut e.V. (research publications, press releases).

Collaboration with energy communities is not (yet) central to the work of the initiatives mentioned. There are, however, several impulses on different forms of such collaboration. As mentioned in an impulse paper from the citizen energy convent 2022, other than using their visibility and agency to raise awareness, citizen energy initiatives could contribute to energy poverty relief through their annual surplus or lowering membership fees in order to become more accessible. The paper also advocates direct collaboration with energy counselling offers or housing associations, emphasising the need to reach out to and support a broader public. This also includes providing information and opening spaces for discussion.

V/ Recommendations and Conclusions

Recommendations

Recommendations for national decision-makers

Energy sharing

- Fully transpose EU RED II/III into national law. To enable energy communities to allocate locally generated electricity directly to participating households that are members of the energy community.

- Simplify supplier and market entry regulations for energy communities and targeted citizen groups. Proof and establish clear "energy sharing" models to lower administrative barriers and introduce incentives for participation.
- Allocate budget for municipalities section on energy sharing management and cooperation with local actors such as energy communities to operate on the distribution grid level for municipalities, generating energy and facilitating local energy sharing. In this way, energy sharing could contribute to greater fairness, particularly for those who cannot afford their own renewable energy solutions.

Gender and intersectional data on energy poverty

- Mandate systematic collection and publication of gender- and intersectional-disaggregated data on energy poverty at local and national levels.
- Develop standard analytical tools and criteria for the multidimensional definition and identification of energy poverty, facilitating a programme monitoring.

Empower energy providers

- Ensure energy providers implement transparent, tiered pricing structures and integrate energy poverty relief directly into their processes.

Move towards energy sharing community through intelligent grid expansion and smart flexibility mechanisms will serve the system, the grid and sustainably will lower energy costs to finally create more justice.

Recommendations for municipal actors

- Collaborate with local actors such as energy communities for energy sharing management and use the synergies of municipal and cooperative resources.
- Subsidise energy efficiency measures and provide financial support for retrofitting and upgrading low-income households, e.g., balcony PV installations.
- Expand community training programmes through the increase of funding for educational initiatives tailored to structurally vulnerable groups.
- Simplify local regulatory procedures to accelerate the development of energy community projects.
- Implement inclusive practices in municipal planning and procurement – applying energy poverty and gender equality criteria for partners and funding eligibility.

Recommendations for energy communities

Inclusive practices

- Introduce solidarity-based practices: guarantee that this additional income will be redistributed in a socially targeted way, for instance the gains of surplus energy can be divided into three parts: reinvestment, member dividends, and the donation of plug-in solar systems to a social cause. Organise events (e.g.,

together with local associations and initiatives) aiming to distribute or donate solar modules to social institutions.

- Offer a small number of gifted shares to individuals with financial limitations.
- Proactively cooperate with social institutions (e.g. Stromspar-Check, consumer associations, social services) having access to structural vulnerable households and design and implement social approaches and outreach.
- Provide trainings and information for the team members about gender and awareness tools.
- Elect one group of persons for who inclusivity will be their main objective.
- Offer workshops and programmes for targeted groups, e.g., WLINTA*.

Recommendations for social institutions

- Work together with local energy communities to share communication campaigns and allow access to decentralised energy projects.
- Work together with civil society organisations, housing associations and consumer protection agencies.

Conclusion

Energy poverty remains a crucial socio-political challenge in Germany, exacerbated by increasing energy prices, geopolitical instability, and the still lack of housing retrofitting. The share of households at risk rose sharply from 12.5% to 25.2% between 2021 and 2022, with especially severe impacts on women, people with migration background, single parents, and the elderly. Conventional policy instruments normally do not address the complex intersectionality of energy poverty, while current legal frameworks also restrict the ability of energy communities to systematically reach and support vulnerable groups.

Energy communities can offer transformative opportunities to democratise energy systems, foster social justice, and lower energy costs, provided they strive for inclusion and social solidarity. Despite technical and legal barriers, these communities have already pioneered targeted outreach, (e.g., via discounted balcony PV modules or donated membership shares), strategic partnerships with social institutions, and gender-inclusive empowerment and capacity-building programmes. However, the interview findings indicate that energy communities continue to face significant structural barriers to inclusive participation. Although awareness of social inequalities exists, particularly with regard to energy poverty and gender imbalances, most initiatives are not systematically designed to reach vulnerable groups. Financial barriers, limited organisational capacity, and the lack of clear definitions and data limit the inclusion of households being affected by energy poverty, while gender and intersectional inequalities persist, especially in leadership and technical roles.

Similarly, while energy-efficient renovation is recognised as an important instrument to address energy poverty, it is not yet a core activity of energy communities due its complexity, resource constraints, and dependence on political and planning frameworks. In contrast, citizen empowerment and training represent a core strength, especially when gender-sensitive and intersectional approaches are applied in traditionally male-dominated sectors.

Access to energy is further constrained by the current regulatory framework in Germany, which prevents energy communities from directly distributing locally generated electricity. Participation therefore remains largely financial, limiting direct benefits for low-income households. While solidarity-based practices exist, their impact remains marginal. Energy sharing is widely perceived as a key opportunity to improve social inclusion and reduce energy costs, but delayed legal implementation continues to restrict its potential.

Germany’s delayed transposition of energy sharing laws (EU RED II/III) prevents broader access to locally generated renewable energy, especially for low-income tenants and households unable to buy shared of energy communities. Aiming to maximise the impact and ensure a truly socially and gender just energy transition, policy frameworks and community strategies must consider intersectional fairness, expanded cooperation, and financial accessibility.

Finally, it is to mention that at the stage of their establishment, energy communities often prioritise achieving economic viability and securing financial

stability, as these represent considerable challenges for founders. Consequently, the commitment to ensuring access for socially or financially disadvantaged groups frequently receives less attention. This tendency can be attributed not only to the voluntary nature of much of the work and the resulting scarcity of time and resources, but also to a lack of intersectional data on vulnerable groups and a limited awareness of inclusive solutions, which in some cases could be implemented with comparatively little effort. A stronger and more explicit prioritisation of inclusivity within strategic planning and governance processes is therefore essential, given that fairness, openness, and democratic participation constitute the core principles of the energy community model.

To realise their potential as instruments in the fight against energy poverty, energy communities must be deliberately designed with social inclusion at their core. This requires systemic adjustments, including clearer and operational definitions of energy poverty, improved data availability, simplified regulatory frameworks, and financial instruments that reduce entry barriers for vulnerable groups. Furthermore, considerations of gender and social equity need to be embedded into both the governance and operational practises of energy communities. Building strong partnerships with municipalities, social services and civil society organisations can play a crucial role in this regard. Only under these conditions, energy communities can evolve from primarily middle-class initiatives to genuinely inclusive and transformative actors within the energy transition.

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GENDER4POWER

The citizens' fight against energy poverty

The role of energy communities and other citizen initiatives

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1. Introduction and methodology

Energy poverty is a growing issue across Europe, and Greece is no exception. This report explores how energy communities and other citizen initiatives can help address energy poverty in an efficient, inclusive, and sustainable manner. According to the most recent Eurostat report on housing conditions in Europe, 19% of the Greek population in 2024 reported being unable to adequately heat their homes (Eurostat,2026). This figure is significantly higher than the EU average of 9.2%.

Citizen-led energy communities have demonstrated strong solidarity and targeted support for vulnerable groups (Koukoufikis et al., 2023). However, gender inequalities have not been taken deeply into consideration in the development and implementation of these support actions. Building on these initiatives, the GENDER4POWER project aims to integrate a gender-specific perspective into all best practices identified locally so far.

The insights and findings in this report are based on a combination of field research, literature review, and the longstanding expertise of Electra Energy - the project partner responsible for the Greek demonstrator - with energy communities nationally and internationally. This mixed-methods approach has proven to be an effective way to collect data and validate it through real-time application.

2. Energy poverty and the measures to tackle it

Energy poverty has become an increasingly significant issue in Greece, particularly in the aftermath of the 2007 economic crisis. While a legally binding definition of energy poverty is still lacking, national initiatives have introduced a structured framework of indicators to monitor the phenomenon. In line with the provisions of the National Energy and Climate Plan (NECP), the National Energy Poverty Alleviation Plan (Hellenic Republic, 2021) established a comprehensive set of methodological tools for identifying energy-poor households. Four Energy Poverty Advisory Hub (EPAH)[1] aligned indicators were initially selected by the Hellenic Ministry of Environment and Energy:

- M/2 Indicator, representing households whose energy expenditure is less than half of the national median, highlighting cases of under-consumption and potential thermal discomfort;
- 2M Indicator, representing households whose energy expenditure share exceeds twice the national median ratio, reflecting an excessive financial burden from energy costs;
- AEITH Indicator (Inability to Maintain Adequate Heating), based on self-reported inability to heat one's dwelling adequately; and
- AAPL Indicator (Arrears on Utility Bills), capturing households unable to make timely payments for energy bills.

[1] https://energy-poverty.ec.europa.eu/

In addition to these four, the National Observatory of Energy Poverty[2] under the Centre for Renewable Energy Sources and Saving (CRES) proposed two composite indicators (I–II and I–IIeq) to improve accuracy in assessing energy deprivation. These indicators define energy-poor households as those meeting both of the following criteria:

- The annual cost of total household energy consumption is below 80 % of the cost required to cover minimum energy needs, and
- The household's disposable income is below 60 % of the national median (with I–IIeq adjusting income for household size using the OECD equivalence scale).

The I–IIeq indicator has been adopted as the primary national metric for monitoring energy poverty. Moreover, CRES has developed an additional indicator, the coverage of basic energy needs per household, calculated as the ratio between actual energy consumption and the theoretically required consumption for key end-uses, providing further insight into unmet energy demand and thermal comfort (CRES,2021).

The National Observatory of Energy Poverty data includes data for the years 2016-2021. In Fig. 1 we can see the different indicators of energy poverty for the Attica region. We can see that there is a great diversity among the different indicators.

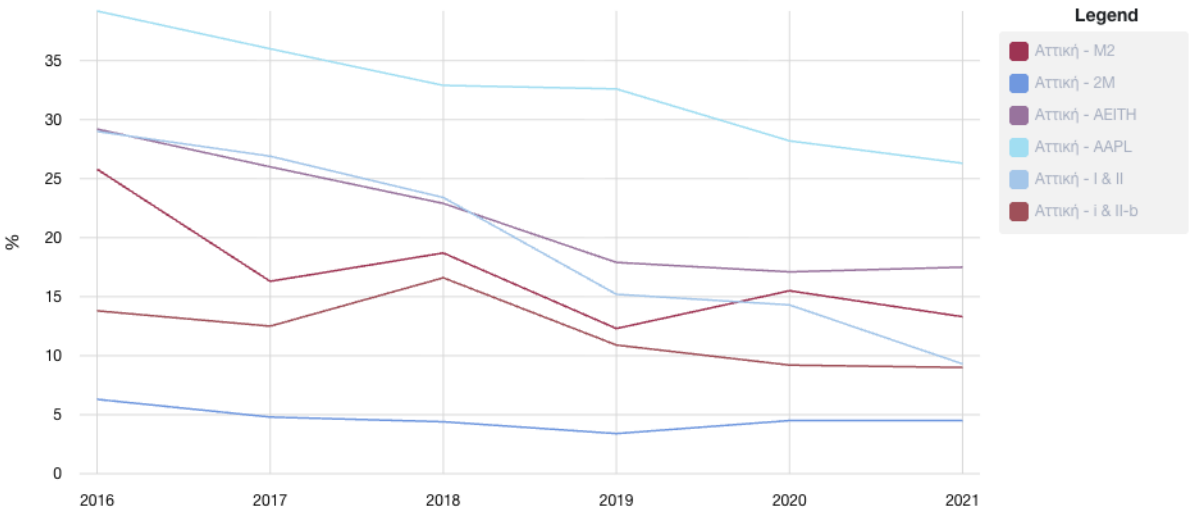

Figure 1:Energy poverty (%) among the general population based on the different indicators in Attica region between 2016 - 2021 source: https://energypoverty.gr/charts.html

In fig. 2 we can see the evolution of the I-IIeq indicator for Greece (red line) and the Attica region (blue line) specifically, for the same period.

[2] https://energypoverty.gr/

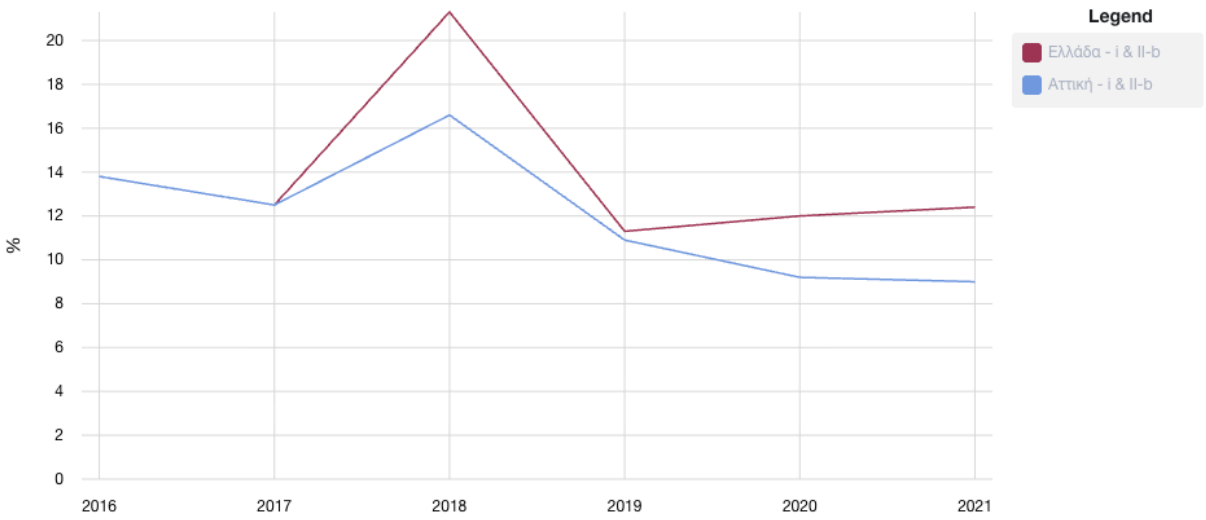

Figure 2:Energy poverty (%) among the general population based on the I-IIeq indicator in Attica Region and Greece between 2016 - 2021 source: https://energypoverty.gr/charts.html

More recent data can be found in the EPAH website where we can find the full list of indicators, disaggregated by age, income, family and dwelling type, tenure type and urbanization density. For example we can see in Figure 3 the indicator % of people unable to keep home adequately warm for two of these subgroups.

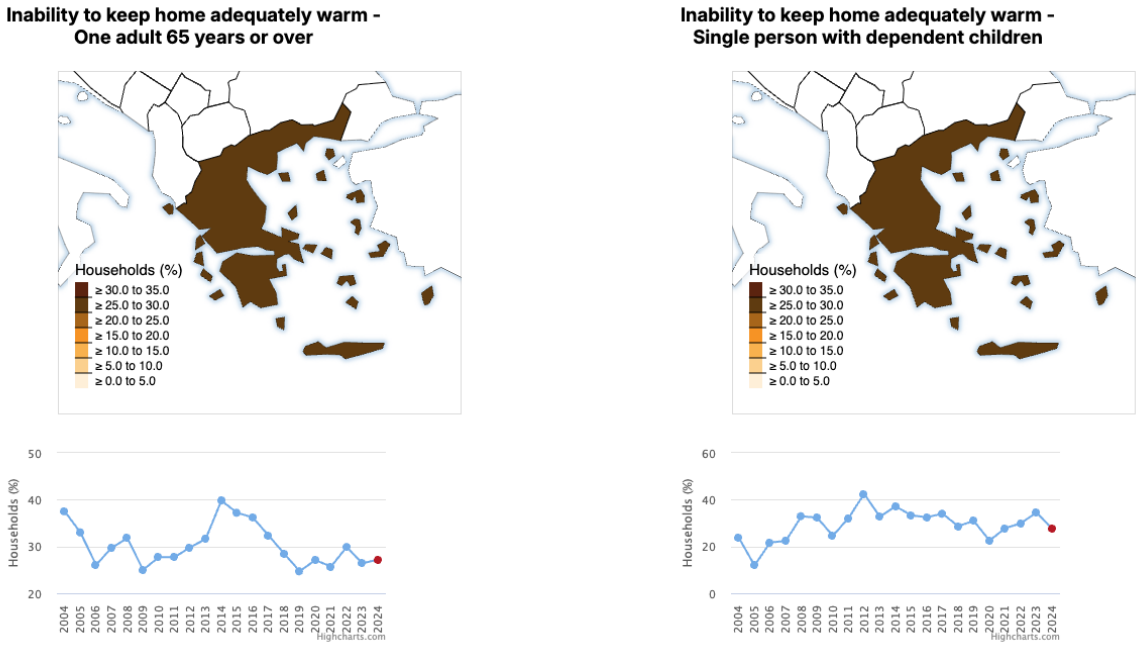

Figure 3: (%) of people 65+ year old people and single people with dependent children unable to keep home adequately warm in Greece between 2014 - 2024 source: https://energy-poverty.ec.europa.eu/

High energy prices in Greece including electricity and heating costs are one of the main issues regarding energy poverty, as high energy prices disproportionately affect low-income households, such as those in Greece, leading to difficulties in meeting basic energy needs. For example, the electricity price per kilowatt hour in

2024 was around 0.23 euros per kilowatt hour, when in 2007 the price was between 0.08 - 0.11 euros per kilowatt hour (Sargentis et al., 2025).

In the Athens Urban Area, recent research indicates that energy poverty remains a significant challenge, though estimates vary depending on the indicator used. According to a recent study (Kalfountzou et al., 2024), approximately 20–22% of households report being unable to keep their homes adequately warm, while around 27% experience arrears on energy bills and 19% live in dwellings with leaks or dampness. However, the study's modified indicators - the *Low Income High Cost (LIHC)* and *Low Income Low Energy Efficiency (LILEE)* approaches - capture a broader scope of vulnerability, identifying 22% and 15% of households as energy poor, respectively. These results suggest that roughly **one in five households in Athens experiences some form of energy poverty**, underscoring the need for more nuanced and locally adapted measurement tools.

As highlighted in a variety of research studies and reports (Petrova & Simcock, 2019), energy poverty is gendered, affecting especially single mothers, elderly women living alone, and those engaged in informal or part-time work. These groups are often vulnerable due to a combination of lower income levels, unpaid caregiving responsibilities, and restricted access to energy assistance. Greece, also, demonstrates a very low Gender Equality Index (59.2) compared to the EU average (71.0), as demonstrated through the yearly assessment by the European Institute of Gender Equality (EIGE)[3]. Gender inequalities remain highly pronounced in the domain of work. With a score of 69.4 points, Greece ranks 24th in this domain, its lowest ranking compared to the other domains. Furthermore, women continue to face a higher risk of poverty compared to men. Between 2021 and 2022, the percentage of men at risk of poverty saw a slight decline - from 19% to 18% - while the rate for women remained unchanged at 19%. The most significant gender disparity appears among lone parents: 41% of lone mothers are at risk of poverty, compared to 29% of lone fathers. Despite these realities, most energy poverty policies in Greece remain gender-blind, and women are underrepresented in both the design and leadership of relevant initiatives. Neither the original or the updated Greek National Energy and Climate Plan (NECP) (Hellenic Republic, 2023) make any reference to the dimension of gender or women when referring to strategies against energy poverty. Furthermore, there is no gender-disaggregation of data included in the above indicators. This gap is also clearly demonstrated in the recent report by Andreosatou and the JUSTEM project (Andreosatou, 2024).

This gap was merely covered by an EIGE report (EIGE, 2023) which focused on the socially fair transition of the European Green Deal. This report disaggregated two indicators of the EPAH, the % of people unable to keep the home adequately warm and the % of people with arrears on utility bills. The data for Greece for the year 2021 can be seen in Table 1.

[3] https://eige.europa.eu/gender-equality-index/2024

Table 1: Gender-disaggregated data of energy poverty in Greece. Source: EIGE

People unable to keep the home adequately warm (%, +16, 2021) (i)				
	Women	Men	Women	Men
65+	20	15	8	6
Low educational attainment	27	25	12	12
Single	25	22	10	9
Lone parents	31	27	12	11
Non-EU migrants	33	33	12	13
People with disabilities	24	20	12	11
People with arrears on utility bills (%, +16, 2021) (i)				
	Women	Men	Women	Men
16-24	31	30	8	9
Low educational attainment	31	33	9	10
Single	25	22	10	9
Lone parents	31	27	12	11
Non-EU migrants	37	33	11	12
People with disabilities	29	27	8	9

In the same report, we can see that in 2021, a significant share of non-EU migrants in Greece struggled to keep their homes adequately warm, with 33% of both women and men reporting difficulties. Lone parents were similarly affected, particularly lone mothers - 31% of whom faced this challenge, compared to 27% of lone fathers. Given the ongoing energy crisis, these numbers have likely increased in recent years.

Energy communities were first introduced into Greek legislation in 2018 (Hellenic Parliament, 2018), allowing citizens, local authorities, and cooperatives to jointly produce, consume, and manage renewable energy. These entities were recognized as civil cooperatives with social and environmental aims. In 2023 a new law (Hellenic Parliament, 2023) updated this framework to align with EU directives on Citizen Energy Communities (CECs) and Renewable Energy Communities (RECs). The new legislation clarified legal definitions, enhanced democratic governance, and restricted participation from profit-driven actors, but created a transitional gap. Energy communities in Greece also face few major challenges, including limited grid access, frequent policy changes, and the misuse of EC benefits by commercial actors. While genuine citizen-led projects remain marginal, recent legal shifts (e.g., from net metering to net billing) have made participation less attractive for households. To realize their potential, ECs need stronger policy support, fairer grid access, and greater public awareness (Neij et al., 2025). Recently, delays in the implementation of energy community projects resulted in the loss of €100 million in subsidies intended for community batteries and self-generation schemes (Aposporis, 2025). The failure to deliver these funds signals significant hurdles in Greece's pursuit of energy democracy and equitable access to clean energy resources (Energypress, 2025).

While energy communities hold great potential for addressing energy poverty through collective self-consumption and inclusive governance, their impact in Greece remains imbalanced. Most initiatives lack explicit gender strategies, and women, especially those from vulnerable groups, are underrepresented as members or beneficiaries. Projects such as GENDER4POWER aim to close this gap by integrating gender-sensitive practices to tackle energy poverty into local energy community models, demonstrating that inclusive approaches can both strengthen social equity and improve program effectiveness.

3. Energy communities facing energy poverty

This chapter explores the role energy communities can play in tackling energy poverty, the barriers they face, and the steps needed to ensure that vulnerable groups are included in the energy transition.

3.1. Inclusiveness and participation measures

Reaching people in energy poverty

Energy communities in Greece show limited but emerging efforts to engage energy-poor households, which comes mainly from genuine citizen-led initiatives. According to the most recent qualitative survey Mapping of Energy Communities, 2020 (Electra Energy, 2020), while 84% of surveyed communities expressed an interest in offering community-based services (such as energy education, awareness campaigns, or information on renewables), only 25% planned to offer direct energy support to vulnerable social groups. Nevertheless, several case studies illustrate more targeted approaches.

Since the survey, a lot of efforts have been implemented. For instance, Hyperion Energy Community in Athens developed a solar park, under the virtual net-metering model, and decided to support 9 households and social organisations by offering them free shares. CommonEn[4], based in Ioannina, and COEN[5], based in Athens, also developed a solar park operating under the net metering scheme and have included 1 vulnerable household each, through the project Συνενέργεια (Impact Hub, 2023).

Following the devastating earthquake in Crete in 2021, specifically in the wider area of Arkalochori in the Municipality of Minoa Pediada, the energy community MINOAN ENERGY, based in the same village, decided to take action against the upcoming risk of energy poverty for the residents. The community submitted a series of proposals for immediate interventions in the affected areas and, by decision of its Board of Directors and in light of the completion of its second solar park, committed to covering the electricity needs of 30 low-income families through net metering for as long as necessary.

Despite these promising examples, people experiencing energy poverty are still not widely included in energy communities. Participation is typically limited due to insufficient structural support, lack of tailored funding mechanisms, and the

[4] https://www.commonen.gr/en/
[5] https://coen.coop/en/

financial barriers to joining a cooperative. In all successful cases, inclusion of vulnerable households was made possible only because the broader community covered their costs. Reaching energy-poor citizens often relies on collaboration with local municipalities or outreach through broader community networks. These partnerships have proven effective but remain ad hoc and under-resourced.

Gender balance

A report by the project EUCENA (Rescoop, 2022) showed a gender imbalance in Greek Energy Communities aligned with the European one: women are significantly underrepresented in leadership and decision-making roles in energy cooperatives, often lack visibility in both membership and governance, and tend to have lower self-assessed technical knowledge than men. The survey highlights clear resource gaps, with women expressing specific needs around access to funding, training, and supportive networks. The substantial gender imbalance in the governance of energy communities was also revealed the 2020 survey , data collected from 329 energy communities showed that:

- 42% have no women at all on their boards of directors.
- 34% have only one woman, and just 1% have four or more. This lack of representation suggests that decision-making within energy communities is heavily male-dominated, limiting the integration of gender-sensitive approaches in their planning and outreach.

This data illustrates the male-dominated nature of governance in the sector, which in turn limits the integration of gender-sensitive approaches in community energy planning and outreach. One exceptional case is WEnCoop[6], an energy community with a member base of women exclusively. They count 60 members and have installed solar capacity both for self consumption and commercial purposes.

Some Greek energy communities have begun to look to initiatives like REScoop.eu's Gender Power Working Group and its Ambition Statement (Rescoop 2023), which calls for inclusive, democratic, and gender-aware energy models. While this has helped raise awareness and spark dialogue, implementation remains limited. Crucially, there are still no gender-specific strategies in place to identify or address energy poverty.

Participation of Energy-Poor Households

The direct participation of energy-poor citizens as cooperative members, energy recipients, or project co-owners remains limited. Many communities are created within closed social networks (e.g., friends and family) as a core coordinating group, rather than through open calls to the wider community. As a result, inclusive participation is often not prioritized, and vulnerable groups tend to be passive beneficiaries rather than active stakeholders. This means that they receive the support, usually in the form of free electricity, in a passive way and they don't participate in general assemblies, decision-making processes, planning and strategising within the community.

[6] https://sege.gr/success-stories/wencoop/

3.2. Access to energy

Energy poverty refers to a household's *inability to reliably access and afford essential energy services* -such as adequate heating, cooling, lighting, hot water, and energy to operate appliances- which negatively affects health, well-being, and living standards. It is a multidimensional concept influenced by factors including low income, high energy expenditure relative to income, and poor energy performance of dwellings. Common EU-level indicators (Eurostat, 2024) include the share of households unable to keep their home adequately warm, difficulty paying utility bills or arrears on bills, and high energy expenditure in proportion to household income.

In Greece, energy poverty is identified using combinations of such indicators (for example, the share of households unable to keep their home adequately warm as measured in EU-SILC surveys), even though an official unified national classification has only recently been updated to better incorporate actual household energy needs (including cooling). (Energy Poverty Observatory in Greece)

Many vulnerable households, particularly those with low incomes, large size, older adults, people with disabilities, or poor housing conditions (e.g., weak insulation), are at higher risk of energy poverty. Specific vulnerability measures often used in practice include inability to afford sufficient heating or electricity bills on time, a disproportionate share of energy costs relative to income, and living in inefficient dwellings.

In reality, energy poor households generally access energy from energy communities in the same way as other participants: through *virtual net-metering* with collective PV production. In this mechanism, energy produced by a shared photovoltaic (PV) installation is credited against participants' electricity consumption even if the generation and consumption points are not physically co-located; this allows individual participants to reduce their grid electricity costs based on their allocated share of production. *Collective self-consumption* refers to the legal and operational setup whereby multiple participants share the output of one renewable generation installation to serve their own consumption rather than exporting it to the grid first. These schemes are currently the most common form of community renewable energy in Greece.

Some energy communities, such as Hyperion, have voluntarily reserved a portion of their shares to support energy poor households. However, **there are no explicit legal obligations or provisions in Greek or EU law that mandate the inclusion of vulnerable or energy poor households in energy communities**, nor any statutory requirement for preferential terms. As a result, energy communities determine their own criteria for inclusion and support, often based on combined social and housing vulnerability indicators (e.g., low income, disability status, household composition, poor housing energy efficiency etc).

Regarding financing, participation can involve upfront costs (e.g., entry shares & PV shares costing up to ~3,000 €), which are typically covered for vulnerable

participants through donations from other members. Without such internal solidarity mechanisms, the cost would be unaffordable for many energy poor households, and in particular for women who are disproportionately affected by poverty and energy cost burdens due to structural inequalities (such as higher unemployment and lower incomes).

The only official references to net-metering or collective self-consumption for energy poor households come from a few municipal initiatives. In these cases, local authorities have established energy communities with the specific aim of including vulnerable residents pro bono -with external support from organisations like Electra Energy. Examples include the Municipality of Chalandri, which is installing PVs on a pergola on a parking lot and will donate 40% of the resulting electricity production, and the Municipality of Trikala, which is in the process of forming a community that plans to allocate a portion of its output to social action.

In conclusion, Greek energy communities do practice inclusion of energy poor households based on cooperative principles, but this inclusion is **not a legally required or systematised provision**. Access to community energy benefits therefore depends on the voluntary commitment of communities and their internal criteria, rather than on targeted legal mechanisms designed to ensure equitable energy access.

3.3. Rehabilitation and energy efficiency

In Greece, energy communities (ECs) have so far played a **limited and mostly indirect role** in building rehabilitation and energy efficiency improvements. To date, there are only a few examples of energy communities actively supporting rehabilitation actions or promoting energy efficiency measures. Their role has mainly focused on capacity building, awareness raising, and technical advice among members, rather than direct implementation or financing of renovation works.

This limited engagement is partly explained by institutional fragmentation in the Greek policy framework. Public support programmes for renovations are typically designed for individual households or professional actors, not collective citizen-led entities. Consequently, ECs lack both dedicated funding instruments and a clearly defined institutional role in the renovation ecosystem.

However, recent developments indicate a gradual shift. Some energy communities have begun designing and offering services for energy efficiency at a collective level. This approach enables communities to coordinate renovation planning, technical support, and potentially collective procurement of services. Because it builds on existing trust networks within the community, it may reduce transaction costs and increase participation, especially among vulnerable households.

For example, the Minoan Energy Community provides non-profit energy advisory services to citizens for energy-saving measures and energy efficiency upgrades of private residences, as well as to public authorities for improvements in municipal

buildings. While it does not directly finance renovations, it facilitates technical guidance and collective organisation.

A notable example of structured facilitation is the SPETE[7] consortium (Supporting PEople Towards Efficiency), established in 2025 under the EU's Citizen-Led Renovation (CLR3) initiative. SPETE brings together the Hellenic Passive House Institute (HPHI), the consumer organisation EKPIZO, and the energy cooperative Electra Energy, each contributing distinct soft measures in support of energy rehabilitation. HPHI provides technical training and guidance on high-performance building renovation, including community engagement activities aligned with Passive House standards. EKPIZO delivers tailored advisory services to thousands of households, with particular attention to vulnerable citizens who may face barriers in accessing renovation support. Electra Energy contributes expertise in community mobilisation, supporting energy communities from founding member recruitment through to project implementation. As a certified "enabling structure," SPETE aims to offer local support services to citizen groups, assists with renovation planning at building, street, or neighbourhood level, and strengthens the technical, legal, and financial capacities of participating energy communities. Importantly, 80% of the consortium's resources are allocated directly to community-facing services, reinforcing its orientation toward practical, citizen-centred facilitation rather than top-down intervention. SPETE will involve the energy communities of Hyperion (Athens), Vrodathos (Chios) and Commonen (Ioannina).

Regarding vulnerable inclusion, energy communities may combine internal solidarity mechanisms (e.g., member donations) with existing national subsidy programmes. Nevertheless, since renovation subsidies are not structurally integrated with the energy community framework, support for energy-poor households depends largely on the initiative and organisational capacity of each community.

3.4. Citizen empowerment and training

Several energy communities in Greece have begun integrating training and awareness-raising activities into their broader missions, with varying focuses and degrees of accessibility. These efforts often aim to build local capacity around renewable energy, energy flexibility, and community engagement.

Commonen, for instance, actively develops co-creation workshops that explore the potential of energy community flexibility (DRRISE project[8]), participatory planning (SSCALE203050 project[9]) and the social impact assessment tool[10] for energy communities. More training sessions are expected to be organized as part of their upcoming Community Solar Garden[11], which will install agrivoltaics in a mental

[7] https://eipak.org/citizen-led-renovation-clr-gnoriste-to-elliniko-consortium-spete
[8] https://dr-rise.eu/
[9] https://www.sccale203050.eu/
[10] https://www.our-power.org/
[11] https://electraenergy.coop/en/communitysolargarden-en/

health facility, involving the residents, workers and local community in the garden and energy related educational activities.

Minoan Energy Community, based in Crete and the largest energy community in Greece with over 850 members, offers an open-access e-learning platform[12] developed in partnership with the Region of Crete. The platform includes webinars, videos, and technical guides on energy democracy, renewables, and cooperative governance. Additionally, the community implements an 18-month training programme that includes information sessions in municipalities, professional associations, and schools.

COEN actively provides educational activities and events aimed at both members and the broader public - with a strong emphasis on energy flexibility, energy poverty, and collective self-consumption. These activities include member support, community workshops, public visits to their solar park, and participation in events with civic stakeholders and research partners. Through the RESCHOOL project[13], COEN delivers educational and engagement activities including interactive workshops, gamification tools such as the Energy Community Card Game, and the RESCHOOL Energy App, which uses real consumption data to encourage energy-saving behaviours.

However, systematic data on gender participation within Greek energy communities remains unavailable, limiting assessment of inclusivity across these training and engagement activities. Most communities do not collect gender-disaggregated data on attendance at events or membership. As a result, it is difficult to determine whether women and other underrepresented groups are benefiting equally from capacity-building opportunities, or whether targeted outreach is needed to ensure broader participation.

3.5. Case study of an energy community

The Hyperion Energy Community, based in the Attica region of Athens, is one of Greece's leading citizen-led energy cooperatives that explicitly includes energy poverty among its core objectives. Founded in 2019 by a small group of individuals committed to energy democracy, cooperative governance, and resilience in the face of rising energy costs, Hyperion has developed an ambitious and socially conscious model for collective renewable energy.

Addressing energy poverty is embedded in Hyperion's founding statute as a core value and further detailed in its business plan, which explicitly accounts for the engagement of vulnerable households and adoption of inclusivity practices generally. Additionally, an internal document describes the structure and objectives of the cooperative's thematic working groups, including the Energy Poverty Working Group (WG), whose mission is to design and implement activities aimed at alleviating energy poverty (Hyperion, 2023). This means that the group is responsible for engaging energy poor households, developing fair criteria for participation, and ensuring that more strategies to tackle energy poverty are

[12] https://minoanenergyedu.eu/
[13] https://www.reschool-project.eu/

developed inside and outside the energy community. In the GENDER4POWER context they will play a key role in the project implementation.

From the outset, Hyperion decided to allocate free cooperative shares to a group of vulnerable beneficiaries and ensure that families at risk of energy poverty can participate in and benefit from the community without having to overcome financial barriers. Currently nine low-income households and two social organizations are included. Their shares correspond to 5% of the electricity produced by Hyperion's 500 kW solar park, meaning approximately 25 kW of capacity is provided at no cost to the beneficiaries. The participating households each receive around 1.9 kW, covering roughly 75–80% of their total energy needs, while the remaining energy is shared between the two social organizations.

Beneficiaries were identified through a collaboration with the municipalities of Chalandri and Keratsini-Drapetsona, which provided lists of eligible households from their official vulnerability registries. Although Hyperion members discussed several financial, social, and housing criteria for inclusion, the final selection was made by the municipalities without direct oversight from the cooperative -an arrangement that has presented communication challenges, as all contact with the beneficiaries must still go through municipal channels. Hyperion intends to refine this process in future initiatives to ensure greater transparency and direct engagement with the participating households.

The financing of these free shares allocated to vulnerable households was collectively covered by the remaining cooperative members. Each member contributed a small surcharge to their own investment (in average numbers: approximately €150 on top of the €3,000 member investment) to fund the 5% of the solar park dedicated to the energy poverty program.

Through this innovative approach, Hyperion demonstrates how citizen-led energy communities can operationalize social inclusion and energy justice, ensuring that vulnerable groups are not only protected but actively empowered within the transition to renewable energy.

4. Main barriers faced by energy communities fighting energy poverty

One of the most significant challenges is regulatory and administrative complexity. EC initiatives face lengthy permitting processes, unclear legal definitions of energy poor consumers, and fragmented responsibilities between national and local authorities. These hurdles can delay or prevent projects from including those most in need of support.

Another major barrier is limited access to finance—both for energy communities and the energy poor households they aim to support. Many low-income households cannot contribute upfront capital or qualify for credit, excluding them from self-consumption or energy-sharing schemes that require some form of investment. Simultaneously, energy communities often lack the financial tools to absorb these costs on behalf of energy poor members.

Technical literacy and participation gaps also limit access to energy community programs. vulnerable populations may lack the digital or technical knowledge to engage with smart metering, demand response, or self-consumption schemes.

5. Other citizen initiatives

Though not a citizen initiative but a municipal one, the Athens Energy Poverty Office[14], conducts home energy audits, offers discounts on municipal taxes for energy poor households, and develops partnerships with local companies to secure preferential offers on appliances and services that improve energy efficiency.

The Heinrich Böll Stiftung (Thessaloniki Office) has also produced studies on energy poverty, mapping its causes, proposing policy changes, emphasizing holistic approaches combining energy efficiency, renewable energy, awareness, and inclusive policy design (Heinrich Böll Stiftung Greece, 2020).

The Greek pilot of the REVERTER project[15] takes place in the Athens urban area, where energy poverty affects a significant share of households due to old, poorly insulated housing stock and rising energy costs. Coordinated by the National Technical University of Athens together with CRES and the consumer association EKPIZO, the pilot develops deep renovation roadmaps tailored to different housing types—tenant-occupied apartments, owner-occupied flats in multi-family buildings, and single-family houses. It also launched a digital one-stop shop[16] to guide households through the process of applying for subsidies, planning renovations, and improving energy efficiency. By combining building data analysis, targeted support services, and community outreach, the Athens pilot aims to make renovations accessible to energy poor households and reduce their long-term exposure to energy poverty.

6. Conclusions and recommendations

This report examines how energy communities and other citizen initiatives in Greece are addressing the growing challenge of energy poverty, with particular attention to inclusiveness, gender equality, and the integration of energy poor households.

- Energy poverty remains widespread in Greece, with 19% of the population unable to adequately heat their homes in 2024 - well above the EU average. Women, single parents (especially mothers), elderly women, and migrants are disproportionately affected. Despite this, Greek energy poverty policies remain largely gender-blind, and women are underrepresented in leadership roles within energy communities.
- Greece lacks a legally binding definition of energy poverty, though indicators were introduced in the 2021 National Action Plan.

[14] https://gaef.developathens.gr/
[15] https://reverterhub.eu/pilots-roadmaps/reverter-pilot-athens-greece/
[16] https://energeiakistegi.gr/

- Energy communities, first legalized in 2018 and updated in 2023, have the potential to play a key role but face barriers such as limited grid access, regulatory complexity, and policy instability.
- Energy communities in practice:
    - Communities like Hyperion (Athens), CommonEn (Ioannina), COEN (Athens), and Minoan Energy (Crete) have supported vulnerable households by allocating free shares or covering electricity costs.
    - However, participation by energy-poor households is limited, often leaving them as passive beneficiaries rather than active members.
    - Gender imbalances are pronounced, with 42% of boards having no women and only 1% with more than four. Some communities engage in training, co-creation workshops, and awareness activities, strengthening local capacity.
- Barriers:
    - Administrative and regulatory complexity
    - Lack of financial tools for energy poor households to join ECs
    - Low technical literacy and digital exclusion among vulnerable groups
- Other citizen initiatives: Energy poverty is also addressed beyond ECs.
    - The Athens Energy Poverty Office supports households with tax reductions and energy audits
    - EKPIZO, with NTUA and CRES, participated in the REVERTER pilot in Athens, which developed a digital one-stop shop and tailored deep renovation roadmaps for different housing types.
    - The Heinrich Böll Stiftung (Thessaloniki Office) contributes research and policy proposals on energy poverty and gender-sensitive approaches.

Energy communities and other grassroots can play a significant role in tackling energy poverty, but their impact remains limited without stronger institutional support, targeted funding, and gender-sensitive strategies. Collaboration across actors (ECs, municipalities, NGOs, and research institutions) will be essential for scaling inclusive and sustainable solutions.

Key Recommendations:

- Adopt a binding national definition of energy poverty and systematically apply composite indicators (income, expenditure, housing quality) to improve targeting of support, especially for women-led households.

- Strengthen financial mechanisms for energy communities to include vulnerable members (e.g. subsidy schemes, revolving funds, municipal guarantees) so that low-income households can join without upfront capital.

- Simplify regulation and permitting for citizen energy projects, ensuring clear legal recognition of energy-poor consumers and streamlining responsibilities across authorities.

- Mainstream gender equality into all energy poverty policies and energy community practices by setting representation targets, supporting women's

participation through different strategies, and developing gender-sensitive outreach.

- Promote partnerships between energy communities, municipalities (e.g. Athens Energy Poverty Office), NGOs (e.g. EKPIZO, Heinrich Böll Stiftung), and EU projects (e.g. REVERTER) to combine renewable energy with energy efficiency and social support.

- Invest in training and empowerment programs for vulnerable groups, focusing on energy literacy, cooperative governance, and technical skills, to move beyond passive beneficiary roles.

- Raise public awareness of the potential of energy communities, highlighting success stories like Hyperion and WEnCoop, to build trust and encourage replication.

- Ensure stable policy frameworks so that community projects can scale sustainably

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GENDER4POWER

The citizens' fight against energy poverty

The role of energy communities and other citizen initiatives

February 2026

Lukas Bunkus, Project Coordinator at "Atnaujinkime miesta"

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1. Introduction and methodology

This report addresses the pressing issue of energy poverty in Lithuania and evaluates the role of energy communities and citizen-led initiatives in mitigating its effects. With recent data indicating that 20% of Lithuanian households were unable to maintain adequate heating in 2023, energy poverty remains a critical social and economic challenge. The report aims to provide a comprehensive overview of the current situation, relevant policies, and the development of community-based solutions, incorporating a gender-sensitive perspective throughout.

The research methodology employed includes an online questionnaire, formal information requests to governmental bodies, and extensive desk research. Given the nascent stage of energy communities in Lithuania, available data is limited; nevertheless, this report seeks to assess their inclusiveness, operational status, and impact on energy poverty, alongside other citizen initiatives contributing to sustainable energy access and social welfare.

2. Energy poverty and measures to tackle it

Energy poverty remains a significant concern in Lithuania. Even though the data on energy poverty from last year (2024) has not been published yet, one can form a general picture by looking at overall poverty figures.

The at-risk-of-poverty rate in Lithuania in 2024 was 21.5 percent, and compared to 2023, it increased by 0.9 percentage points. In 2024, about 620 thousand residents lived below the at-risk-of-poverty threshold. The absolute poverty rate in 2024 was 5.8 percent, an increase of 2.2 percentage points compared to 2023. In 2024, about 167 thousand residents of Lithuania lived below the absolute poverty threshold.

The most recent data on energy poverty indicates that 20% of the population was unable to keep their homes adequately warm in 2023. This marks an increase from 9.3% in 2022 and 6.9% in 2021, positioning Lithuania among the EU countries most affected by energy poverty, alongside Spain, Portugal, Bulgaria, and Greece.

Several factors contribute to the high levels of energy poverty in Lithuania:

- Aging and Inefficient Housing Stock: Approximately 90% of multi-family dwellings were constructed before 1993 and are characterized by poor energy efficiency. These older buildings consume about twice as much energy as those built after 1993, leading to higher energy costs for residents.
- Rising Energy Prices: The surge in energy prices, particularly following the cessation of energy imports from Russia in 2022, has disproportionately impacted low-income households, exacerbating energy poverty.
- Limited Access to District Heating: Only about 25% of the total building stock is connected to district heating systems, which are generally more cost-effective and energy-efficient compared to individual heating solutions.

Financial support

In Lithuania, the social security system is primarily based on a socialized, solidarity-based model, managed by the State Social Insurance Fund, commonly known as Sodra.

Regarding the support for households, Lithuania provides means-tested heating cost compensation to support low-income residents in covering household heating expenses. Eligibility and benefit size are determined using the State-Supported Income (SSI), which in 2025 equals €243,1 per month. Compensation is granted when heating expenses exceed 10 % of the difference between household income and the statutory threshold—two SSIs per family member or three SSIs for a single person. The state reimburses the portion of heating costs exceeding this limit.

Since 2023, a digital data-sharing system managed by the State Data Agency has automated income and property verification, significantly accelerating approval procedures. Payments are made directly to heating suppliers and reflected as deductions on residents' utility bills.

During the 2024–2025 heating season, approximately 161,000 residents per month—around 5.6 % of Lithuania's population—received this compensation, with total state expenditure amounting to €56.5 million.

Additional guarantees for socially vulnerable households

The electricity supply cannot be cut off if the debt to the supplier or distribution operator does not exceed 3 base social benefits (as of 2025, the base social benefit in Lithuania is €70 per month).

Also, supply cannot be terminated on weekends (Fridays, Saturdays, Sundays), holidays or holiday eves, or during extreme weather events (for example, when temperature goes below −15 °C or above +30 °C).

For gas supply, the rules allow for disconnection under certain circumstances — non-payment among them — but often only after certain warnings and procedures.

Energy Efficiency Investments

A record allocation of nearly €800 million has been directed towards enhancing energy independence and efficiency. This includes €206.6 million earmarked for financing energy communities, aiming to reduce electricity bills for households experiencing energy poverty.

Energy Communities

"Energy community" is a relatively new concept in Lithuania. The first one was registered in 2023 and only a few of them have been operating fully and generating power. The majority are still in the process of development.

Energy communities in Lithuania are divided into two categories: *Citizen Energy Communities (CECs)* and *Renewable Energy Communities (RECs)*. As of now, there are 59 communities in total: 52 CECs and 7 RECs.

References in Lithuanian legislation on energy communities' tie to alleviation of energy poverty are quite scarce. However, recent amendments to the Law on Renewable Energy of the Republic of Lithuania state that:

"Reserved (priority) for renewable energy communities or citizens' energy communities, when in their members' / shareholders' / participants' meeting the municipalities, municipal enterprises and/or municipal institutions hold more than 51 per cent of the majority of votes, and such communities' main purpose is to reduce energy deprivation and/or to provide benefits to vulnerable consumers.

Citizen Energy Communities (CECs)

The Law on Electricity introduces provisions for CECs, which are legal entities that can engage in various energy activities, including generation, distribution, supply, consumption, energy efficiency services, and electric vehicle charging. Key features include:

- Open and Voluntary Participation: membership is open to individuals, SMEs, and local authorities.
- Local Control: A majority of voting rights must be held by local residents to ensure effective control.
- Primary Purpose: The focus is on providing community benefits rather than generating profits.
- The State Energy Regulatory Council is responsible for granting and revoking the status of CECs and overseeing their compliance with relevant regulations.

Renewable Energy Communities (RECs)

Under the Law on Renewable Energy, RECs are defined as non-profit legal entities that can produce, consume, store, and sell renewable energy. Key characteristics include:

- Open and Voluntary Participation: Membership is open to individuals, small and medium-sized enterprises (SMEs), and local authorities.
- Local Control: At least 51% of voting rights must be held by natural persons residing in the municipality where the energy project is located or in adjacent areas.
- Primary Purpose: The main objective is to provide environmental, economic, or social community benefits rather than financial profits.
- A public body acquires the status of a renewable energy community upon receiving a permit to produce electricity from the State Energy Regulatory Council.

Absence from housing renovation

Energy communities in Lithuania have historically been absent from the standard multi-apartment renovation process, but the situation is beginning to change for the better.

While Lithuania is a European leader in the "remote prosumer" model (individuals buying shares in distant solar parks), local community-based energy integrated into building renovation is still in its infancy.

Why have they been absent?

- Legal Silos: Historically, renovation focused purely on efficiency (insulation, windows) under one set of rules, while energy generation was treated as a separate, individual investment.
- Administrative Burden: Setting up a legal entity for an energy community was seen as "too much homework" for residents already stressed by the renovation process.
- The "Remote" Preference: It was simpler for a resident to click a button and buy 2 kW from a solar park in another district than to negotiate with 40 neighbors about installing panels on their shared roof.

3. Energy communities facing energy poverty

To begin with, it must be noted that practical information about the activity of energy communities in Lithuania is quite limited. Only two energy communities (out of 59) have responded to our query. Bearing that in mind, this report is indeed "work in progress" directly related to the evolution of energy communities in Lithuania from just figures on paper to fully operating entities which generate power and help alleviate energy poverty.

In the scope of this report, three energy communities have been studied. Two of them are citizen-led and the third one is municipal:

- CEC Saulelydis is a community group that shares energy and helps people who struggle to pay their bills.
- CEC Vytis makes solar energy for its members but doesn't have special programs to help vulnerable people.
- Šiauliai (4th biggest city in Lithuania) Municipal Energy Community is run by the local government and gives free solar power to families in need.

3.1. Inclusiveness and participation measures

The energy communities studied show varying degrees of inclusiveness. CEC Saulelydis has made inclusiveness a priority from its inception, with 40% of its members being socially vulnerable households1. These members were involved from the outset without facing barriers, and the community director oversees the integration of energy poverty measures. Gender representation is relatively balanced (3 men, 4 women), though there is no formal gender equality policy.

Šiauliai Municipal Energy Community was designed to systematically address energy poverty by allocating at least 30% of its generated electricity free of charge

[1] Socially vulnerable household/person is one tied to the receipt of social assistance under the Law on Cash Social Assistance for Low-Income Residents. This definition was used in all three cases studied in this report.

to identified vulnerable residents. Participation is institutional in nature, with the municipality and 16 municipal institutions as members; vulnerable citizens benefit directly from the output rather than through formal membership.

CEC Vytis has no measures in place to address energy poverty and reports no data on socially vulnerable participants. Gender balance is skewed, with women representing only 24% of members, and there is no gender equality policy due to lack of interest.

3.2. Access to energy

In CEC Saulelydis, once the planned 22 kW solar power plant becomes operational (expected 2026), electricity will be distributed equally among members. Savings from renewable generation will be redirected to assist vulnerable households in meeting essential needs such as heating and hot water.

Šiauliai Municipal Energy Community will operate a 4 MW solar plant, supplying municipal buildings and distributing surplus free of charge to energy-poor residents. Allocation rules ensure at least 1 kW of installed capacity per vulnerable household, covering nearly 100% of their annual electricity needs.

CEC Vytis produces 99.71 kW of solar capacity for its members but does not have targeted provisions for vulnerable households or surplus distribution based on social criteria.

3.3. Rehabilitation and energy efficiency

None of the three communities have yet undertaken housing rehabilitation actions as part of their projects.

In Šiauliai, the large-scale renewable investment indirectly supports efficiency by reducing energy costs for municipal services and households receiving free electricity. Financing is provided through a €206.6 million Ministry of Energy instrument offering preferential loans to municipalities for renewable projects.

In CEC Saulelydis and CEC Vytis, no rehabilitation measures are reported, and there are no requirements for vulnerable households to co-finance energy interventions at this stage.

Consumer education and advisory services

In Lithuania, consumer education and advisory services related to energy communities are delivered through a network of public institutions, consumer organisations, research bodies, and municipalities rather than a single centralized service. National authorities such as the Ministry of Energy and the National Energy Regulatory Council (VERT) provide legal guidance, policy information, and access to funding programmes supporting community energy initiatives. Consumer organisations, particularly the Lithuanian Consumers' Alliance, offer advisory hotlines, consultations, and awareness-raising activities on energy efficiency, renewable energy, and participation in collective energy projects. Research institutions and EU-funded projects supply technical guidance, feasibility support, and capacity-building for municipalities and citizen groups.

Overall, Lithuania's consumer education and advisory system for energy communities is evolving and largely project-driven, combining regulatory guidance, consumer counselling, technical expertise, and municipal-level initiatives to support citizens and local groups interested in establishing or joining energy communities.

3.4. Citizen empowerment and training

Training dedicated to energy communities in Lithuania exists mainly through seminars, workshops, and EU-funded capacity-building projects, covering legal frameworks, organisational models, financing options, and technical aspects of renewable energy projects. While these initiatives provide valuable guidance for municipalities and citizen groups, the training landscape remains fragmented and project-dependent, with no permanent national programme or standardized curriculum. Access can be uneven, often favoring groups already engaged in energy or municipal networks, and follow-up support for participants is limited. Additionally, the lack of long-term institutional structures means that knowledge dissemination and practical guidance for new or smaller communities can be inconsistent, potentially slowing the broader adoption of energy communities across the country.

Training within the three studied energy communities is limited:

CEC Saulelydis organises member-only training sessions on the benefits of solar power plants; the training does not address gender issues.

CEC Vytis conducts broad public communication about the concept and functioning of energy communities but does not deliver structured training or cover gender-specific content.

Šiauliai Municipal Energy Community does not yet have documented training activities but demonstrates strong municipal capacity-building in renewable energy management, with potential to extend training to citizens and integrate gender-sensitive approaches in the future.

3.5. Case study of an energy community

In October 2024, the Šiauliai City Municipality, together with 16 affiliated municipal institutions, established Lithuania's first energy community designed to offer free electricity provision to roughly 1,300 vulnerable residents. The initiative is powered by a 4 MW solar power plant, developed under a €206.6 million national financing scheme, which supports local authorities in constructing solar or wind capacities and redistributing surplus energy to those most in need.

The participating institutions include the municipal administration, cultural centers, social service bodies, schools, sports academies, and other municipal entities. At least 30% of the electricity generated is earmarked for free distribution to individuals facing energy poverty. The structure ensures that each beneficiary receives a minimum of 1 kW installed capacity, aligning with average annual household electricity needs (~1,200 kWh), thus ensuring near-complete coverage.

This pioneering model emphasizes municipal leadership, social equity, and green energy deployment in unison and is regarded as a highly replicable blueprint for other regions aiming to tackle energy poverty while advancing renewable energy integration

4. Main barriers faced by energy communities fighting energy poverty

Energy communities in Lithuania, such as CEC Saulelydis, Šiauliai Municipal Energy Community, and CEC Vytis, are increasingly recognized as important actors in addressing energy poverty. However, despite their willingness and efforts, these communities face several significant barriers that limit their impact. These challenges fall into three broad categories: contextual, administrative, and gender-specific barriers.

1. Contextual Barriers

Observed Issues:

- Inefficient housing and high energy consumption.
- High and volatile energy prices.
- Limited impact of renewable energy projects alone in reducing energy poverty

Deeper Root Causes:

Legacy infrastructure and slow modernization – Many residential buildings were built during the Soviet era or early post-Soviet period without energy efficiency standards. Retrofitting is expensive and slow, often requiring coordinated public and private investment.

Market design and energy pricing policies – Energy pricing in Lithuania is partially influenced by global energy markets, which creates exposure to volatility. Price support or subsidies for low-income households are limited or fragmented.

Insufficient integration of supply and demand-side policies – Renewable energy deployment is mostly focused on generation rather than combining generation with energy efficiency and demand management.

Socio-economic inequality – Vulnerable populations lack disposable income or access to credit, limiting the adoption of energy efficiency measures or participation in community energy schemes.

Limited local capacity for energy planning – Municipalities and local governments often lack the technical skills and planning frameworks to integrate energy communities into broader energy poverty alleviation strategies.

Implication: Even technically viable community energy projects cannot reach their full potential without systemic improvements in housing, energy market policies, and socio-economic support mechanisms.

2. Administrative and Institutional Barriers

Observed Issues:

- Complex bureaucratic procedures.
- Lack of centralized support or guidance.
- Difficulty accessing funding.
- Low public awareness.

Deeper Root Causes:

Fragmented regulatory landscape – Multiple agencies oversee permitting, grid connection, environmental compliance, and subsidies, with overlapping or unclear responsibilities.

Lack of dedicated institutional frameworks for energy communities – Energy communities are a relatively new policy area, and existing institutions are not fully equipped to support them systematically.

Limited capacity in local governments and communities – Small citizen-led groups often lack expertise in technical planning, financing, or project management, creating dependency on external consultants or EU projects.

Complexity of funding mechanisms – EU or national grants require extensive documentation, co-financing, and technical know-how, which can exclude smaller or less organized communities.

Low public engagement and trust – Historical experiences of poorly communicated policies, or limited participation in local governance, reduce awareness and willingness to join energy communities.

Implication: Structural inefficiencies and knowledge gaps prevent timely project implementation and limit equitable access to energy community benefits.

3. Gender-Specific and Social Barriers

Observed Issues:

- Underrepresentation of women in leadership roles.
- Disproportionate impact of unpaid domestic work on women's participation.
- Lack of gender-disaggregated data and targeted strategies.

Deeper Root Causes:

Cultural norms and historical biases – Traditional perceptions of gender roles continue to shape who participates in technical, financial, or leadership positions in energy initiatives.

Institutional blind spots – Policies and funding programs rarely include gender-specific criteria or requirements, leading to systemic exclusion.

Intersection with socio-economic vulnerability – Women from low-income households or rural areas face compounded barriers, including lower access to information, mobility constraints, and caregiving responsibilities.

Limited mentorship and network opportunities – Women have fewer role models or professional networks in renewable energy, reducing confidence and opportunities to engage.

Data gaps – Lack of gender-disaggregated metrics prevents the identification of inequities and limits the design of inclusive interventions.

Implication: Without deliberate gender-sensitive interventions, energy communities risk replicating existing social inequalities and failing to harness the full potential of diverse participation.

4. Additional Root Causes Not Often Discussed

Policy inertia and short-termism – Energy community support is often linked to temporary EU-funded projects, creating a cycle of short-term initiatives rather than sustainable, long-term institutional support.

Limited integration with social policy – Energy communities operate primarily in the energy domain, but energy poverty is multidimensional (income, housing, health), requiring cross-sector coordination that is often missing.

Technological adoption barriers – Small-scale communities may struggle with technical issues such as grid integration, smart meters, or energy storage, which are not adequately supported by national technical standards or guidance.

Fragmentation among communities – Lack of networking and knowledge-sharing between energy communities leads to duplication of effort, slower learning, and inefficient use of resources.

Political and policy uncertainty – Changing regulations, energy policy priorities, or subsidy schemes create risk and reduce community willingness to invest in long-term projects.

5. Other citizen initiatives

Lithuanian Consumer Alliance, established in 2012, is a coalition of Lithuanian non-governmental consumer rights organizations. Its core mission is to protect Lithuanian consumers' interests nationally and internationally by engaging with state institutions, businesses, and NGOs. The Alliance conducts public education, participates in policymaking, carries out research, and serves on key national councils related to consumer rights. Internationally, it is an active member of the European consumer organization BEUC, the European Commission's Consumer Policy Advisory Group, and other EU bodies, contributing to the development of European consumer policy.

The Consumer Alliance has successfully implemented STEP (duration – June 2019 - November 2021)

"Solutions to Tackle Energy Poverty (S.T.E.P.) is a project that developed a simple, innovative and scalable model of measures to tackle energy poverty.

The STEP project involved consumer organisations from Bulgaria, Cyprus, Czech Republic, Latvia, Lithuania, Portugal, Slovakia, Poland, Slovakia, the United Kingdom and the Czech Republic. They are all united under one umbrella by the European Consumers' Organisation (BEUC). The partners are supported by a UK research team. Throughout the project, consumer organisations have worked with institutions and NGOs working directly with consumers to ensure that the project's solutions reach people who want to take control of their heating and energy bills.

STEP's main objective is to alleviate energy poverty by promoting behavioural change among consumers. Consumers in or close to energy poverty received advice and guidance on how to affordably apply energy saving solutions in their homes.

Public institution "Circular Economy" was established to help promote zero-waste production and lifestyles in Lithuania and to promote the principles of the circular economy among business and government. "The Circular Economy works actively with municipalities and the Ministry of the Environment to share its knowledge and the experience of the European environmental NGO networks Zero Waste Europe and the European Environmental Bureau. We also work with a wide range of businesses to help them move towards a circular economy business model.

Charity and support fund "Circular Economy Initiatives"

A non-governmental organisation that provides skills training and job placement support to people from vulnerable social groups. The project activities are funded by the European Social Fund Agency.

6. Conclusions and recommendations

- Energy poverty in Lithuania has sharply increased, with 20% of households unable to keep homes warm in 2023, driven by inefficient old housing, rising energy prices, and limited district heating access.
- The government provides financial support to vulnerable households and invests heavily (€800 million) in energy efficiency and renewable energy, including €206.6 million for energy communities.
- Energy communities are emerging tools to tackle energy poverty but are mostly in early stages, with 59 registered (52 CECs, 7 RECs).
- Social inclusion varies across communities:
    - CEC Saulelydis includes 40% vulnerable members and fairly balanced gender representation.
    - Šiauliai Municipal Energy Community offers free electricity to vulnerable residents via a large solar plant.
    - CEC Vytis lacks targeted social measures and has low female participation.

- None of the communities have implemented housing rehabilitation; energy efficiency gains are mainly indirect.
- Training and empowerment efforts exist but generally lack gender focus and are still developing.
- Major barriers include poor housing quality, high energy costs, complex bureaucracy, limited funding, and gender inequalities.
- Overcoming barriers requires joint efforts from governments (regulation, incentives), communities (inclusiveness), and the EU (funding, policy support, knowledge sharing).
- EU programs like Horizon Europe can provide vital support to scale up energy communities' impact.
- Citizen initiatives such as the Lithuanian Consumer Alliance and STEP project complement energy community efforts by promoting consumer education and energy saving.

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GENDER4POWER

The citizens' fight against energy poverty

The role of energy communities and other citizen initiatives

February 2026

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1. Introduction and methodology

Energy communities are reshaping the way we produce, share, and govern energy, placing citizens at the centre of the transition to clean and affordable solutions (Koukoufikis et al., 2023). By promoting inclusivity, they enhance social cohesion, create local jobs, and strengthen economic resilience (Hanke and Lowitzsch 2020). With local control over energy pricing and infrastructure, these communities offer a powerful model for sustainable development. However, ensuring the participation of households affected by energy poverty and achieving gender equity remain key challenges of inclusivity (Živčič and Tkalec 2020). This report provides a comprehensive assessment of the role and potential of energy communities and citizen initiatives in addressing energy poverty and gender perspective, with a focus on the Gender4Power's demonstrator in Slovenia.

In Slovenia, inclusive energy communities are at a minimum level of maturity (Živčič and Tkalec, 2019). The situation is a result of an inadequate regulatory framework, undeveloped sustainable business models, and low public awareness about the role of energy communities in a just energy transition and their benefits for citizens and local development. The inclusion of energy vulnerable and poor households is minimal to non-existent, and this is reflecting the general status of development of energy communities in the national context.

Building on the identification of key drivers and barriers to the participation of households affected by energy poverty in community energy initiatives, the study presented in this report places particular emphasis on inclusive tools within energy communities and citizens' initiatives. Our analysis explores various financial and organizational models and mechanisms, such as solidarity pricing, funding for energy-poor households, energy sharing and models for direct participation in decision-making, beyond mere access to discounted kilowatt-hours.

This report aims to identify barriers, challenges and relevant practices in terms of financial and organisational models, as well as the legal and administrative conditions that would facilitate the participation and empowerment of people affected by energy poverty in community energy schemes (e.g., the impact of co-ownership on social support eligibility, the possibility of different energy providers for community members, etc.). The methodology combines a literature review, analysis of project findings, semi-structured interviews and mail survey with community managers and members, national experts, representatives from Eco Fund (national fund that finances energy efficiency measures), and a municipal employee from the Gender4Power demonstration site. We also examined available gender-disaggregated data to provide additional quantitative insights and to assess the capacity to monitor the implementation of inclusive tools and models within energy communities aimed at alleviating energy poverty.

2. Energy poverty and the measures to tackle it

2.1 Current trends of energy poverty in Slovenia in the gender perspective

In Slovenia, energy poverty is officially defined by the Regulation on Criteria for Defining and Assessing the Number of Energy Poor Households, issued under the Electricity Supply Act (Official Gazette of the Republic of Slovenia, No. 172/21). According to this regulation, energy poverty refers to a situation in which a household with an income below the at-risk-of-poverty threshold is unable to meet its basic energy need, such as heating, cooling, cooking, lighting, and hot water due to inadequate housing conditions, unaffordable energy costs, or poor energy efficiency. A second definition complements this by focusing on households whose energy expenditures represent a disproportionate share of their disposable income. Slovenia faces significant levels of energy poverty due to significant share of low income, rise in energy prices and high proportion of residential buildings in poor conditions (Živčič and Tkalec, 2020). According to the Statistical Office of the Republic of Slovenia (SORS, 2024), 7.3% of households (63,000 households) were affected by energy poverty in 2024 which represent 110,000 individuals. To determine these figures, the assessment includes households or individuals who fell below the poverty risk threshold and met at least one of the following criteria:

- Financial inability to maintain adequately heated housing,
- Arrears on housing costs, including energy services, due to financial hardship,
- Living in homes with poor conditions, such as leaking roofs, damp walls, floors, ceilings, or cracked window frames.

In Slovenia, the **overall rate of energy poverty has steadily declined over the past decade,** decreasing from 10.9% in 2014 to 7.3% in 2024 (SORS, 2024). While the decline has been slow, it has remained consistent. Among households without dependent children, energy poverty has also declined, from 12.2% in 2014 to 8.8% in 2024. This represents a moderate downward trend.

The energy poverty rate among single men living alone was 17.5% in 2014, peaked at 19.1% in 2018, and dropped to 13.9% by 2024. There were considerable fluctuations after 2019, but the overall trend is a moderate decline. **Single women had higher rates than men** at the start, with 20.0% in 2014 and a stable period around 20% during 2017–2018. By 2024, the rate had decreased to 14.7%. After relatively high rates until 2019, this group has seen a steady decline.

In 2014, 18.3% of older individuals living alone were affected by energy poverty. By 2024, this had dropped to 13.5%. A notable decrease occurred after 2019, despite some fluctuations between 2020 and 2022.

Energy poverty among older men rose to a peak of 20.4% in 2018, but dropped significantly to 12.9% by 2024, representing the largest improvement across all groups. **Older women had the highest energy poverty rates at the start, with 19.3% in 2014, spiking to 24.5% in 2015.** By 2024, the rate had decreased to 14.5%. Although this group remains the most vulnerable, the long-term trend is downward, with some variability after 2020.

We can conclude that single-person households are consistently more exposed to energy poverty than multi-person households. **Women, especially the elderly, are the most vulnerable group.** The trend in all subgroups is slowly going down, which probably means that the measures have started to work.

2.2 Strategic framework and policy actions to alleviate energy poverty in Slovenia

The **National Energy and Climate Plan** of the Republic of Slovenia (NECP) adopted in 2020 and the draft proposal for updating the NECP and its proposed targets aims to reduce the share of energy-poor households. Slovenia approved a **National Plan for Reduction of Energy Poverty** in 2023 with clear goals for 2030. The overarching target for energy poverty by 2030 is to reduce the share of energy-poor households under 4.6%. The energy poverty goal targets a minimum of 3,500 investments in energy efficiency (EE) and renewable energy (RE) for households affected by energy poverty by 2030 (building on the ZERO500 programme).

In addition to energy policies, a financial support programme is led by Eco Fund (*Ekosklad*), the public institution responsible for managing the Slovenian Environmental Public Fund. One of its programmes named **ZER 2024** is specifically designed for households affected by energy poverty. **It consists in providing subsidies for partial or deep renovation projects.** The subsidies cover 100% for the project costs up to 18 000 euros. Households that have received social financial assistance, benefited from two exceptional social aid payments in a year, or are receiving support for a child's scholarship, are eligible for the funding. In Slovenia, 60 advisory boards provide technical supports to households for their energy renovation projects. To go a step forward, single contact point called "One Stop Shop" for financial, technical, administrative support is currently under development in Slovenia, to pool all the different services at once. Experts and NGOs such as FOCUS are following the process to make sure it includes different level of monitoring, including specific approach for vulnerable households. In addition, Eco Fund promotes with NGOs guidance toward households to reduce energy bills and provides package of tools to reduce energy (and water) consumption. **Nevertheless, there is currently no financial program in Slovenia to financially support the participation of people, affected by energy poverty, in energy communities that would reimburse membership fees or purchase cooperative shares. Support schemes focus on infrastructure investments, but not on equity costs.** However, it is important to highlight that the National Plan for the Reduction of Energy Poverty envisages a fund to support the participation of people affected by energy poverty in energy communities, but this fund has not yet been operationalised. Slovenia has transposed the EU directives on energy communities into national law through the **Act on the Promotion of the Use of Renewable Energy Sources (ZSROVE)** and the **Act on Electricity Supply (ZOEE)**, enacted in 2021. While the legal framework provides a foundation, some areas need further elaboration:

- **Clarification of Terms:** Certain criteria, such as "effective control" and "autonomy," are mentioned but not fully defined within the national context.

- **Implementation Details:** Specific procedures for establishing and operating energy communities, including registration processes and technical requirements, are still being developed.

- **Designated Oversight Authority:** The legislation does not specify a single authority responsible for overseeing and supporting energy communities, leading to potential coordination challenges.

A gap remains between political objectives and sufficient actions on the ground that needs to be addressed. The methodology implemented to produce this report aims to provide a deeper understanding of the drivers and barriers to reducing energy poverty with special focus on typically excluded groups (by gender, disability, age or income) and promoting gender inclusion in energy communities. The knowledge developed through the demonstrators within the framework of the Gender4Power project will subsequently inform the development of enhanced policies and implementation tools, thereby contributing to more effective strategies for reducing energy poverty.

3. Energy communities addressing energy poverty

This section has been completed based on the results of the survey and semi-structured interviews, as well as the project findings, literature and gender data sets.

In Slovenia, the inclusiveness of energy communities is still in a formative stage. They mostly do not have set social goals within their activities. Most initiatives rely heavily on partnerships with municipalities and NGOs, while direct engagement with households affected by energy poverty remains limited. Inclusiveness must go beyond token participation or targeting "vulnerable" populations as passive recipients. Instead, participation must mean decision-making power, ownership, and co-creation of solutions.

3.1. Inclusiveness and participation measures

Research (Standal, 2018; Hanke and Guyet, 2023; Vogel et al., 2024) shows that men often hold most shares in household energy cooperatives, and women's inclusion in energy communities remains limited. Women frequently have lower incomes, which creates a financial barrier to participation. These inequalities can have significant consequences, especially in cases of divorce.

Several common reasons for limited female participation have been identified. Meeting schedules are often incompatible with family responsibilities, which are typically assumed more by women than men. Additionally, the energy sector's male-dominated culture and inherent sexist behaviours (Vogel et al., 2024) may discourage women from getting involved. Structural gender issues, including disparities in prior education, also mean women tend to have less familiarity with the technical skills required for renewable energy projects. Power dynamics reflecting male superiority and female subordination can emerge within energy communities (Vogel et al., 2024).

Increasing women's involvement requires creating an environment of trust and supportive attitude to build their confidence and encourage their participation in

energy community initiatives. Addressing these barriers and challenging gendered structures is essential to ensuring equal opportunities for accessing renewable energy and reducing energy poverty among marginalized groups (Vogel et al., 2024). Furthermore, men and women often have different motivations for joining energy communities: men tend to prioritize financial dividends, whereas women may be more engaged through their experience with collective initiatives, such as children's activities (Vogel et al., 2024).

Although some energy communities successfully reach vulnerable households, the majority struggle to engage these groups meaningfully, especially in the absence of regulatory support (Hanke and Guyet, 2023). Gender-disaggregated data from Slovenia show that elderly women, who are among the most affected by energy poverty, remain particularly underrepresented in energy communities (SURS, 2024).

One energy community in Ljubljana, comprising of 136 households, reported no significant gender inequality issues during the project's development phase. Numerous meetings were held to prepare the project, and women were as active as men. This project was based in a condominium that required between 50% and 75% of votes (depending on legal interpretation) to approve the installation of solar panels. On average, women were more active than men. Women took the lead in communication among the members, while men were solely focused on the project's objectives. Women handled detailed preparations and reporting, often seeking more thorough analysis and information. Participation was roughly evenly split. In this case, the electricity is distributed according to the needs but there is no prior access for vulnerable households. This case is still too recent to evaluate the level of savings on energy invoice since the solar panels are in place.

It is difficult to estimate the number of households affected by energy poverty in the building. A reserve fund that has aggregated financial participation from owners over the last decade helped to avoid upfront investments for building's wall insulation and solar panels. In the past years, contributions to this fund were proportional to flat size, set at €1.75 per square meter and €1.30 per square meter during winter. Unpaid invoices were not prominently visible and did not enable clear identification of energy-poor households.

After project completion, the solar power system did not cover all energy needs, so some energy costs remain. The energy community plans to evaluate the benefits after the first year of energy production. Social engagement was a key factor for success, driven by a few highly motivated individuals—none of whom were women in this case. Building managers reported around 10% of invoices as unpaid but followed up to recover these amounts.

Few communities, like Zeleni Hrastnik, have attempted outreach beyond middle-income environmentally concerned citizens. A shift is needed towards working through tenants' associations, elderly people's networks, and women's collectives to bring people affected by energy poverty into leadership roles.

3.2. Access to energy

There are **no current examples** of vulnerable groups participating in energy communities in Slovenia. A **supportive environment** is needed, involving institutions like **Borzen** (the Slovenian electricity market operator).

Zeleni Hrastnik's Solar School project provides one of the only functioning examples where renewable energy is shared between public institutions and households with one case of supported vulnerable household. The model developed follows a cooperative framework. The Zeleni Hrastnik Energy Cooperative provides renewable energy sources to the members of the cooperative with affordable prices, assist the local community in this area, and implement projects. Any natural or legal person except big companies may become a member of the cooperative, and the cooperative's committee decides on membership. To become a member, it is necessary to pay a mandatory share, which amounts to EUR 100.00 for natural persons and EUR 1,000.00 for legal persons. During the project development phase, other members covered the membership fee of one household as an act of solidarity. However, the cooperative doesn't address specifically vulnerable groups. The electrical energy generated is then used directly by each consumer for their own needs. Any surpluses are fed into the grid. Each consumer in the energy community is always connected to the grid and consumes as much electricity as they need.

While community energy self-consumption in Slovenia has so far been constrained by regulatory and technical conditions, based on recent legal changes, it will no longer be limited to the immediate perimeter of an energy community. Recent legal changes have removed infrastructure-based restrictions, such as those linked to individual transformer stations. Although the new legal framework came with new barriers for community energy. Until the end of 2023, self-consumption in Slovenia was facilitated through annual net metering, which has now been discontinued, leaving the determination of the billing period to the market. Since most suppliers are not yet prepared to implement the new system and are currently not entering into community self-consumption contracts, self-consumption community projects are coming to a halt.

Furthermore, the legal framework enabling energy sharing through the distribution network will become operational in the coming months. This will allow surplus electricity to be redistributed to vulnerable households under more affordable conditions.

3.3. Rehabilitation and energy efficiency

Slovenia has made progress in setting targets for renovation of vulnerable household homes (e.g., ZER2024 and some other Eco Fund programmes). For instance, an Eco Fund programme ZER2024 proposes 100% financial support for households affected by energy poverty, which can reach up to 18.000 EUR. This financial support can cover 2-3 renovation actions per household, and it is not enough to cover deep renovation. Moreover, these subsidies often fail to reach those most in need due to bureaucratic complexity, and lack of support. The following obstacles have been identified out of previous project findings (LIFE21-CET-ENERPOV-RENOVERTY/101077272):

- Awareness and access to information: Households affected by energy poverty lack information about subsidies intended for them (ZER2024) and the free assistance of coordinators available to them during the subsidy application process.

- Eligibility criteria for subsidies: There are materially deprived population groups who are not included in the national system of social support and therefore are not eligible for the Eco Fund subsidy, which covers 100% of investment costs (ZER2024). Such low-income households face difficulties in financing energy renovations.

- Scope of subsidized measures: The Eco Fund subsidy for reducing energy poverty (ZER2024) does not finance full or deep renovation, nor the installation of heat pumps and solar power plants.

- Decision-making process in multi-apartment buildings: To carry out energy renovations on the common parts of multi-apartment buildings, an agreement among the households in the building is required. For works considered maintenance, more than 50% agreement is needed; for construction works on common parts of the building that require a building permit, 75% agreement is required (in the case of a loan, even 100% agreement).

- Rental housing: At the national level, there are no coordinated measures or funding dedicated to reducing energy poverty in rental housing. The segment of the population living in rented accommodations faces a significantly higher risk of poverty. While the poverty risk rate among homeowners is 11%, the rate among renters is as high as 26.5%.

Even though the Eco Fund programme currently provides supports to vulnerable households in their renovation projects, policies to facilitate their participation in energy community initiatives are still under development. A dedicated call is expected to be launched in the coming years by the Ministry of Environment, Climate and Energy to support energy community models that include vulnerable households (under the operationalisation of the Climate Social Fund). Consequently, this lack of coordination between policies on energy communities and renovation for vulnerable households limits the implementation of integrated projects that combine building renovation with energy community development.

NGOs such as Focus, an association for sustainable development, have been actively involved in developing demonstrative renovation and energy community projects, such as Renoverty LiFE project and SocialNRG LIFE project, which aim to advance policy and legal frameworks in Slovenia to alleviate energy poverty. Focus also collaborates with other initiatives led by local stakeholders, including ReRural with the Regional Development Agency Zeleni Kras, and Local Energy Agency Pomurje.

Capacity building for energy communities is further promoted through the Life Comet project, which supports networking and provides a centralized website compiling materials and tools for all phases of development, including good practices and financing schemes: https://energetske-skupnosti.focus.si/

These previous initiatives have been particularly important in establishing the conditions for the demonstration site of Gender4Power.

Under the frame of H2020 Infinite project, comprehensive residential renovations were performed to a 1982 building in Ravne na Koroškem with prefabricated façade panels, energy-efficient windows, air ventilation systems and solar panels that improve energy efficiency and reduce costs. 92 nonprofit flats owned by a housing fund company are occupied by tenants. Consequently, upfront costs were covered by the housing fund company and the reduction of costs due to improved energy efficiency were evident. The project included the creation of an extra wooden floor with six high standard apartments to contribute to cover the renovation but also rebalance the social structure of the building, primarily occupied by vulnerable households. In this case no upfront investment participation was expected from them (Papapietro, 2025) them. The building will be equipped with solar panels which will contribute even more to energy cost savings.

The energy community of Ljubljana, located on Smoletova Ulica (Zavodnik and Berlič, 2025), undertook a renovation of the roof concurrently with the installation of solar panels. The condominium's reserve fund, previously supported by monthly contributions from owners, was sufficient to cover all renovation costs in addition to the solar panel installation. In contrast, in the case of the Zeleni Hrastnik energy community, no housing renovation measures have been implemented.

3.4. Citizen empowerment and training

In Slovenia, women accounted for only 32,4% of graduates in Science, Technology, Engineering and Mathematics (STEM) fields in 2014 (Kalin A. and Živčič L. 2023). Most current training programs on renewable energy are technical such as solar installation and energy efficiency (Borzen, 2025) and mainly attract male participants. While Energap developed accessible training materials for Slovenia on energy community development, covering legal framework, financial aspects and capacity building under the EU funded POWER-E-COM project (Energap, 2023) and FOCUS implemented capacity-building activities in the field of energy community (FOCUS, 2025) under the EU COMET project, significant gaps remain. There is a clear need for targeted energy literacy programs for woman and vulnerable groups that:

- Connect energy justice to broader issues like housing rights, care work, and public services.
- Use popular education methods, storytelling, visual tools, assemblies, not just webinars or manuals.
- Build organizing skills: how to speak at council meetings, run a cooperative, or form a solidarity network.

Training should also target municipal workers and policy actors to unlearn biases and adopt community-cantered approaches.

3.5. Case study of an energy community

The **Zeleni Hrastnik Solar School Project** is a citizen-led energy cooperative that brings together the Municipality of Hrastnik, a local primary school, several NGOs, and individual residents. The cooperative currently includes 30 members, both individuals and legal entities. At its core, the initiative is built around two solar photovoltaic installations: a **229 kWp system** on the school's rooftop (cost: €268,348.27 excluding VAT) and a **132 kWp system** on the Novi Dom building (cost: €88,467.67 excluding VAT), which together serve as a hub for shared renewable energy.

From **August 1, 2024, to July 31, 2025**, the school's rooftop installation is generated approximately **285 MWh** of electricity—slightly below the initial projection of **331 MWh**. The Novi Dom installation is expected to produce around **110 MWh**. The electricity generated is distributed among **16 households, three public buildings, and two local businesses**, creating a practical model of local energy solidarity.

The project is co-financed through a mix of municipal support, cooperative member contributions, and a small external grant. While it demonstrates both technical feasibility and strong community engagement, inclusiveness remains limited, as household participation was not based on socioeconomic vulnerability. The initiative also faces challenges, including the lack of policy mechanisms to prioritize vulnerable groups and persistent technical and legal barriers to ensuring equitable energy distribution.

4. Main barriers faced by energy communities fighting energy poverty

Next to social, housing status and income conditions, energy poverty is also shaped by factors such as location, climate, family structure, gender dynamics, health conditions, and specific energy and transport requirements. Those with important energy demands including families with children, individuals with disabilities, and elderly members tend to face a higher risk of experiencing energy poverty and its consequences. Women, particularly single mothers and older women are especially impacted due to persistent inequalities in income distribution, social standing, and the unequal burden of caregiving responsibilities.

Energy communities in Slovenia face a complex web of barriers that hinder their ability to address energy poverty in transformative ways. These barriers are technical, legal, financial, cultural, and political.

Contextual barriers:

A high share of old, inefficient residential buildings makes technical upgrades costly and logistically complex. Property ownership fragmentation (e.g., shared ownership in apartment blocks) complicates collective renovation decisions. Many households affected by energy poverty are renters and have no control over the buildings they live in, making them invisible to property-focused renovation programs.

Administrative and policy barriers:

Slovenia's current legal framework for energy communities requires further improvement to promote inclusivity and alleviate energy poverty. For example, energy sharing mechanisms remain suboptimal, and the legal status requirements for energy communities are still restrictive. Moreover, municipalities often lack both the capacity and a clear mandate to support community energy projects targeting the most vulnerable groups. Bureaucratic complexity and limited access to information also prevent vulnerable households from benefiting from renovation funding, although Eco Fund programmes are attempting to address this by providing dedicated support for the application process (Ensvet).

Economic barriers:

Most energy communities rely on upfront capital contributions, excluding low-income individuals by design. There are no grant or equity options specifically targeting participation of vulnerable people in energy communities. Market logic dominates the energy transition, leading to prioritization of efficiency and profits over equity and justice. In addition, net billing 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-met model.

Cultural and social barriers:

Community organizing around energy remains weak, with most initiatives being technical and NGO-led rather than grassroots. Energy poverty is often stigmatized, creating feelings of shame that discourage people from accessing available subsidies and support programmes. Additionally, gender roles and time constraints, particularly for women in caregiving roles limit participation in community energy activities.

Gender-specific barriers:

Elderly women living alone are among the most energy-poor, yet they are rarely engaged as leaders or designers of energy solutions. Energy trainings are often male-dominated, technical, and exclusionary in tone and format. Childcare, transportation, and digital access are rarely considered in participation design.

The Social Climate Plan and the associated funding, currently in the finalization process, along with the development of One-Stop Shops involving Ministries, public institutions, NGOs, Borzen, municipalities, and social centers, represent an opportunity to address these barriers with additional funding calls and supports and more efficient technical and administrative support for vulnerable households.

5. Other citizen initiatives

In Slovenia, a network of energy communities has been established to support citizen-led initiatives and serve as a key platform for raising awareness about the importance of inclusivity within energy communities. Several NGOs such as FOCUS, association for sustainable development, Umanotera, Karitas and Red Cross are promoting initiatives to alleviate energy poverty and advocate for more advanced national policies on those matters. However, based on the interview and consultation of national experts, no initiatives directly led by citizen to tackle energy poverty were identified. Interviews also indicated that households facing energy poverty were not consulted to design energy poverty policy in Slovenia.

6. Conclusions and recommendations

The emergence of energy communities in Slovenia is still at an early stage, and there is currently limited experience to draw upon regarding the integration of gender perspectives or the inclusion of households affected by energy poverty. The survey conducted received few responses related to gender, highlighting a general lack of knowledge and possibly even awareness about the gender-related inequalities that may arise within energy communities. While some communities reported no issues in this regard, their conclusions are largely based on recent pilot initiatives, which may not yet reflect the broader social, financial, technical, and legal barriers present in the Slovenian context. Furthermore, available statistical data clearly provide evidence on how older women are overrepresented among the situation of energy poverty in Slovenia (SURS, 2024).

Based on insights gained from the interviews and analysis, we propose the following recommendations:

- **Energy as a Right:** Treat energy as a basic human right rather than a market commodity. Prioritize using surplus energy from community systems to fully cover the needs of low-income households before any credits or profits are allocated. Guarantee de-commodified access by eliminating variable rates, market exposure, and upfront costs for the most vulnerable members. Expand existing citizen-led energy communities and support the creation of new ones to ensure inclusive, community-driven energy access for all.

- **Capacity building for collective action:** Build the understanding of inclusivity and gender or intersectional issues among variety of actors that can tackle energy poverty, from NGOs to social actors, from experts and researchers to policy- and decision-makers. The capacity building would also empower households by offering training on public speaking at council meetings, cooperative management, and forming solidarity networks.

- **Accessible education approaches:** Prioritize popular education techniques such as storytelling, visual tools, and community assemblies over reliance on formal webinars or manuals.

- **Equitable governance:** Establish rotating leadership structures, implement quotas for marginalized groups, and provide childcare support to make participation more accessible and representative.

- **Inclusive participation models:** Enable meaningful involvement by valuing non-financial contributions such as time, caregiving, and local expertise without stigma or bias linked to ownership status. They should also explore ways to empower people affected by energy poverty, particularly women, to become better organized and more vocal in shaping national energy poverty policies and in designing programmes to address it.

- **Promote gender equity:** Build local coalitions with housing unions, feminist groups, and seniors' associations to co-create inclusive energy policies. Recruitment strategies should be co-developed with local social workers and feminist or women focused organizations. Apply a "do no harm" regulatory approach that prevents community energy initiatives from reinforcing existing inequalities. Support women's ownership of cooperative shares and ensure all leadership and decision-making roles are open and accessible to women, avoiding gendered hierarchies in organizational structures.

- **Shift from market-based to solidarity-based funding:** Introduce welfare-oriented mechanisms that offer economic advantages to vulnerable households. These may include income-based shareholding, cooperative equity pools, shared energy schemes, and guaranteed free energy access for those in need.

- **Integrated justice framework:** Link energy justice efforts to intersecting issues like housing, mobility, and public services to reflect the full scope of community needs.

- **Grants for upfront investments and share purchase:** Reinforce financial support at national and local levels for energy communities' initiatives setting clear goals for gender perspective and energy poverty mitigation. In addition, the EU could provide direct funding streams for community-led anti-poverty energy initiatives with no match-funding requirement. EU institutions should actively support knowledge exchange between grassroots movements, not just municipalities or corporations.

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GENDER4POWER

The citizens' fight against energy poverty

The role of energy communities and other citizen initiatives

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1. Introduction and methodology

This document gathers experiences from energy communities and popular initiatives that are working to fight against energy poverty in the Spanish territory. The existing legislative tools at national level are analysed, and specific actions implemented to facilitate the access of vulnerable people to energy communities (ECs) are presented. It details schemes and modalities of participation in collective self-consumption, the pilots for the implementation of rehabilitation actions to increase buildings energy efficiency, and training activities addressed to the local population promoted by energy communities. This study aims to present success stories as well as difficulties, obstacles and concerns of the ECs and initiatives that are being moved in this sector.

To achieve this goal, interviews have been carried out with 5 energy communities and a citizen initiative: Aliança contra la Pobresa Energètica, Arroyo Alumbra, Comunitat Energètica del Guinardó, Comunitat Energètica de La Bordeta, Gares Bide and La Tonenca.

The CEs interviewed have very different areas of action: some are from the urban areas of metropolitan city, which scope is a neighborhood, others from rural areas, located in small and more isolated villages. In addition, these initiatives are located in 3 different regions (Andalusia, Catalonia and the Basque Country). These entities work with very similar objectives, but they developed different solutions and modalities of action; therefore, it has been considered interesting to analyze and compare them, since each case has its own characteristics, needs and resources, and the range of diversity of activities brings a fundamental contribution to the global vision.

2. Energy poverty and measures to tackle it

In 2019, the Spanish government launched the first National Strategy against Energy Poverty. The document established, for the first time, a definition of energy poverty and vulnerable consumers, assessed the situation in Spain, identified areas for action and set targets for reducing this social problem.

In terms of definitions, it established that energy poverty corresponds to 'a situation in which a household cannot meet its basic energy supply needs as a result of insufficient income and which, where applicable, may be exacerbated by energy-inefficient housing.' In turn, it defined a vulnerable consumer as 'a consumer of electricity or thermal energy who is in a situation of energy poverty and may be eligible for support measures established by the authorities'.

In addition, the indicators to be used to measure energy poverty were specified, using the four official indicators of the European Energy Poverty Observatory (EPOV).

1. Disproportionate expenditure (2M): percentage of households whose energy expenditure in relation to their income is more than double the national median.

2. Hidden energy poverty (HEP): percentage of households whose absolute energy expenditure is less than half the national median.
3. Inability to maintain the home at an adequate temperature: percentage of the population that cannot maintain their home at an adequate temperature.
4. Delayed payment of bills: percentage of the population that is behind on paying their household utility bills.

The latest published data show the following impacts (Table 1).

Table 1: Evolution of Official Energy Poverty Indicators in Spain (2019-2024)

Indicator	2019	2020	2021	2022	2023	2024
2M (households)	15,20%	16,10%	15,22%	16,83%	17,01%	No disponible
M/2 (households)	11,50%	11,20%	10,12%	11,80%%	15,53%	No disponible
Inappropriate temperature (people)	7,60%	10,90%	14,27%	17,08%	20,71%	17,60%
Delays (people)	6,60%	9,60%	9,50%	9,23%	9,58%	12,00%

Based on the 2025 report "Pobreza energética y género en España" (Andrea Tejero Sánchez), the latest data confirm that women in Spain are disproportionately affected by energy poverty. Female-headed households—especially single mothers and older women living alone—show the highest rates across all four official energy poverty indicators in the Estrategia Nacional contra la Pobreza Energética (ENPE) 2019–2024. Between 2018 and 2021, about 30% of single-person households over 65 and 21.6% of single-parent households faced disproportionate energy expenses, compared with 16.7% of the general population. Likewise, 17.2% of single-parent families could not maintain adequate indoor temperatures in winter (vs. 10.5% average), and nearly one in five faced delays in paying energy bills. These groups are overwhelmingly composed of women—81% of single-parent households and 71% of older single-person households—revealing the clear feminization of energy poverty.

The report also finds that despite acknowledging gender vulnerability, the ENPE's 19 measures only partially integrate gender considerations: over half mention women or single-parent households, but few apply a truly gender-responsive or

intersectional approach. Women not only experience higher energy costs and inadequate housing efficiency but also bear disproportionate domestic and caregiving responsibilities that increase their energy needs. This reinforces the call for Spain's energy and social policies to embed gender sensitivity across all stages—data collection, energy efficiency programs, and social support—to effectively address the structural roots of energy poverty among women

In this context, the State has various protection mechanisms in place. Firstly, the social electricity subsidy, which consists of a direct discount on the electricity bill for vulnerable consumers. The percentage discount varies according to the degree of vulnerability (vulnerable and severely vulnerable). After several modifications due to the energy price crisis that began in 2021, the discount percentages are currently 42.5% and 57.5% respectively, and will remain so until 31 December 2025. From 1 January 2026, the discounts will be fixed at 35% and 50% respectively. As of 31 May 2025, a total of 1,698,369 households were beneficiaries of the mechanism, although different studies indicate that only 20% of potential beneficiaries actually access it.

Secondly, in Spain, there is a ban on the suspension of electricity supply to certain groups in the event of non-payment. Historically, this applied to households benefiting from the social electricity tariff in which the holder or one of the members of the family unit is under 16 years of age, is in a situation of recognised dependency of degree II or III, or has a recognised disability of 33% or more. However, since 2020, as a result of the COVID-19 pandemic, there has been a ban covering all households benefiting from the social tariff without exception, which has been periodically extended. The extension currently runs until 31 December 2025.

Finally, the central government introduced the so-called "social heating subsidy", a direct annual payment for all households eligible for the social electricity tariff. The minimum amount of the subsidy is €35, but it can be up to €372 depending on the degree of vulnerability of the beneficiary (consumers in situations of severe vulnerability receive a higher amount) and the climate zone in which the beneficiary resides (areas with colder winters receive higher subsidies to cover higher heating costs).

3. Energy communities facing energy poverty

3.1 Inclusiveness and participation measures

Gender: representativeness and participation

The figure of energy communities is born to be, and is, intrinsically innovative and inclusive. Almost all the ECs interviewed have in the statute and the Internal Regim Regulation (IRR), if it exists, a reference to inclusivity and the intention to work to reduce energy poverty. In one case, it is even specified in the IRR that 10% of the energy generated by the EC facilities will be distributed to homes in vulnerable situations. In some cases, the statutes also refer to gender equality and the entity's feminist approach; however, many of the energy communities recognize that these goals have not yet been achieved. Half of the entities interviewed indicate that the members of the cooperative and the positions of the governing body (the

Governing Council) have a balance between women and men participating. The other half, on the other hand, points out that the members, and especially the motor group and the governing body, are very masculinized and predominate older people with good economic situation; however, participation in meetings and activities in many cases is mostly female, indicating that there is a gap between representativeness and effective participation. In addition, the people involved in energy poverty projects, both the beneficiaries of the support mechanisms that are in a situation of vulnerability and the volunteers who participate in specific work groups or in the design of the strategies of the cooperatives, are for the majority women.

Not all the interviewed energy communities can count on a hired person working for it; however, all claim that this figure is necessary to stabilize the entity, to effectively implement the projects and to carry out regular monitoring, and to be able to dedicate additional efforts to aspects such as inclusivity, representation and the fight against energy poverty.

Energy poverty: identification and participation

Despite the interest of energy communities in including vulnerable families in their projects, in many cases difficulties have been identified in reaching these people. This happens especially in the case of urban ECs, where collaboration with the city council, social services or public entities is more complicated and contacts can take a long time to consolidate. In this context, a successful solution has been the collaboration with the Energy Advice Points (PAEs) existing in each district of Barcelona. The PAE identifies people who could benefit from the EC project, and gives them the contact of the Energy Community; these people, if they are interested, talk to the EC to enter the project and consume energy for free (for anonymity reasons it is not possible to make contact proactively, that is, the PAE passes the contacts directly to the EC and that it contacts the vulnerable users). These members, although they do not pay to participate in the EC, formally have the same form of participation as the others. This collaboration, implemented in an EC, attracted interest to be replicated in other urban energy communities.

In rural contexts and small towns, the solutions and strategies are very different; in these cases, all the CEs interviewed have established collaborations with the city council and social services, which have data, contacts and selection criteria already underway. The promoters of ECs are usually already (or have been) involved in social projects in the territory, for their work or for activism in other local entities, and contacts with public institutions are fast and direct. The personal relationships of the people help to consolidate confidence in the project, both in terms of the town hall and the vulnerable families, who personally trust who develops the project and have no doubts in accepting the proposal. In these cases, the EC sometimes do not even need the support of social services, since the identification of families goes directly through personal relationships. The ECs interviewed have been talking and explaining to the identified people the door-to-door project in a personalized way. One of the interesting elements identified in rural areas is that families, although they need it, did not approach the EC asking for participation as vulnerable partners; therefore, the work of identification and active contact is essential to involve these participants. In addition, it has been identified that

proposing free participation to these members is not well received by vulnerable users. On the other hand, mechanisms are proposed to facilitate payment on equal terms with other users, but in different formats; for example, fractionated over time, so that it is not perceived as a form of assistance but as a facilitation to participation.

In an EC, social services already paid part of the bills of families who have been involved in the EC. In this case, the agreement that has been made with the EC and the social services has an economic endowment, that is, a fund of contributions to the social capital financed by the social services themselves, which can be used to guarantee these families access to the EC, so families in a situation of vulnerability do not have to pay any extra expense; instead, social services have faced a decrease in gestures for the invoices thanks to this participation. In any case, the participants are partners like the others, without distinction at the formal level.

In an EC, social services already paid the bills of families who were involved in the community. In this case, the social services themselves decided to pay the contribution for the participation in the energy community of these families, so for the beneficiaries there is no difference; instead, social services faced a decrease in gestures for the bills thanks to this participation. In any case, the participants are partners like the others, without distinction at the formal level.

In all the cases analysed, the issue of anonymisation and care for the people participating in these projects to combat energy poverty has been highlighted as a fundamental issue. The ECs must be responsible for respecting this anonymity, designating, for example, a commission or an internal responsible that has control of the project, meanwhile all the other partners do not receive any information about who participates in the EC thanks to the mechanisms implemented. a commission or reference/responsible that manages private data, without exposing them to the rest of the community. In this way all members participate in equal conditions, without distinctions regarding contributions, aid or fractionations by the EC.

In conclusion, not all the ECs interviewed have a defined and implemented plan of how to contact and include partners vulnerable to shared self-consumption. These entities are still developing strategies, contacts with other local entities, and are studying the experiences of other ECs to replicate existing success stories. The same can be said of the other types of services, such as rehabilitation or sustainable mobility.

3.2 Access to energy

The modality of access to energy of vulnerable participants is very variable and depends on the defined and implemented model of each CE.

In the case of photovoltaic installations in the form of shared self-consumption, work is generally carried out so that vulnerable users have access to this participation without this entailing an extra cost. According to the economic model of each energy community, this participation is facilitated through specific and diverse mechanisms.

An EC designed from the beginning the project of shared self-consumption around the participation of vulnerable consumers[1]. The city council published an open tender for the transfer of a municipally owned public roof; among the criteria for evaluating applications, giving free part of the energy generated to vulnerable families gave additional points. In this case, the EC, which was awarded the use of the roof, defined since its constitution that 10% of the total energy generated went to families in energy poverty, and the calculation of the total costs and the initial investments of the other partners was done in a way that also encompassed the investments of these participants (who should not make any contribution). This EC designed its operating scheme with an investment model; each participating partner pays a part of the total investment at the beginning of the project, and there are no recurring costs. This investment was defined at 2 €/kW. This value has been calculated considering the total cost of the installation, and taking into account that a part of the installation, that is, 10% of the energy generated, was dedicated to people in a situation of vulnerability who pay nothing for this participation; therefore, the energy community decided to assume the extra cost of this part of the installation between all. The EC offers 3 power packs to participants of 0.25 kW, 0.5 kW and 1 kW, depending on their consumption and needs; people who participate as vulnerable, totally anonymously, have access to the smaller package of 0.25 kW free of charge.

In other analysed cases, CEs have small installations specifically dedicated to the participation of vulnerable consumers. These facilities have been paid through "creative" financing. For example, some of the ECs interviewed were presented in calls that wanted to reward innovative projects to promote community projects and fight against energy poverty[2] [3], one organized a fundraising through a specific platform (Goteo), explaining the project that wanted to be carried out and collecting donations from people from all over Spain[4]. In both cases, the money obtained was used to pay for the photovoltaic facilities, and to allow the participation of families in vulnerable situations to self-consumption completely free of charge. In one of the cases, the free photovoltaic installation was the result of the collective purchase process of photovoltaic installations (100+1)[5] promoted by a local group of Som Energia, an energy cooperative providing 100% renewable energy in all the Spanish territory, active to inform and engage people, as well as democratizing the energy sector.

In another case, an EC created a Solidarity Fund[6], which is fed by contributions from members and external people, or thanks to the income received thanks to the organization of activities, talks, workshops. This EC has a quota operating model, that is, participants in shared self-consumption do not have to pay the initial investment of the photovoltaic plant, instead, they pay an annual fee. In this

[1] https://somcomunitats.coop/landing/comunitat-energetica-del-guinardo/
[2] https://es.greenpeace.org/es/noticias/la-energia-del-cole-un-ejemplo-de-comunidad-energetica-hecha-realidad/
[3] https://www.economiasolidaria.org/noticias/la-corriente-entrego-los-premios-inclusivec-a-comunidades-energeticas/
[4] https://www.goteo.org/project/la-energia-del-cole
[5] https://climatica.coop/som-energia-ecoo-instalacion-fotovoltaica/
[6] https://comunitatbordeta.batec.coop/fons-de-solidaritat/

case, families in vulnerable situations can participate in the EC for free, since the annual quotas related to their shares are covered thanks to this Fund.

Other ECs, both urban and rural, are committed to mechanisms of fractionation of the investments and / or quotas that must be paid, allowing people who need to cover their contributions in a broader time range; for example, instead of making the initial capital contribution when joining the project, this payment can be divided into smaller quotas for two years.

3.3 Rehabilitation and energy efficiency

All energy communities demonstrated interest in rehabilitation and energy efficiency actions. However, the implementation of these types of projects is complicated, a high budget is needed, and therefore no CE is working actively and with the desired results in this direction.

In two cases the steering groups are approaching the world of energy efficiency through "soft" measures of facilitation to access to comfort improvements in the home (sensitization, small audits or small low-cost interventions).

For example, an EC is collaborating with the local Red Cross in Osona, in Catalonia[7]. The Osona Red Cross has an advisory program for vulnerable families, which includes energy audits of households. CE Tonenca, located in the village of Tona, has made an agreement with this entity to fight together against local energy poverty. In this way, vulnerable families participating in the energy community, in addition to receiving free energy and EC advice on how to reduce their electricity bills, will receive a free home energy audit carried out within the Osona Red Cross program, and will receive a basic energy microefficiency kit. This includes, for example, LED bulbs, rivets for windows and doors, runoffs, timer plug, water flow savers for shower and taps, thermal reflectors for radiators or electric heaters. This collaboration results in a more complete support action for users that includes receiving energy, training on how to use it and how to read bills correctly, receiving advice and tools to improve the use of energy in the home and reduce energy waste. This affects families in a situation of economic and energy vulnerability; these issues are generally managed by women, who have the burden of homework.

In another case, the EC Arroyo Alumbra, located in the village od Arroyomolinos de León, decided use revenue derived from prizes to finance small energy efficiency measures. They created an energy efficiency kit that addresses small energy saving measures, such as water aerators, energy meters, timers, LED lights, and other elements to isolate windows. This initiative is aimed at all members of the EC. Moreover, it created a small rotating fund so that EC members interested in investing in small measures (such as the purchase of new more efficient appliances) can temporarily use this fund's money; in this case, the beneficiaries are the EC members who need to make investments, but do not have the economic availability when investing.

[7] https://www.cicra.coop/wp-content/uploads/2025/05/Guia-Participacio-Vulnerables-Comunitat-Energetica-El-cas-de-La-Tonenca-Web-1.pdf

Other ideas that are being evaluated are the possibility of designing a training course on energy efficiency issues and collaborating with social housing entities.

The case of "La Diversa"

La Diversa[8] is a housing cooperative in Barcelona, located in the La Bordeta neighborhood, where the La Bordeta Energy Community (CELB) has its scope of action. The Diversa has been very involved with the activities of the energy community since its inception, and both La Diversa and its members are part of the CELB; in addition, one of the photovoltaic facilities of the energy community is located on the roof of the La Diversa building. This very close relationship led to the design of a joint project to carry out the complete rehabilitation of the building, managed and led by CELB.

In the project that part of the investment was prepared by the inhabitants of the building, another part would be financed thanks to the loan of a local cooperative financial entity, and for the rest European and local funding was requested. This process was carried out iteratively, taking into account the availability and budget of the inhabitants of the building (some in vulnerable situations). This project, which was in an advanced state and with the collaboration of all the actors involved, could not be carried out because the Energy Community was not recognized as the official representative of the building and its inhabitants by the entities to which the subsidies had been requested, despite having been designated and recognized by both the property and the inhabitants of the property (members of the EC). At the moment the project is paused

3.4 Citizen empowerment and training

The training of the local community on energy issues is central to all the energy communities analysed. All ECs have been proposing, or are designing, presentations and trainings open to the village or neighborhood, each of them designed according to local characteristics and needs. These activities cover several topics, but all of them include fundamental and everyday aspects such as reading electricity bills, understanding whath an Energy Community is and how to save energy at home through small actions (habits modifications or low-cost investments).

Other topics discussed that ECs have been touching in seminars and sessions are the changes in conditions to electricity contracts without the user consent, the environmental impact behind the energy transition, popular struggles for the right to energy (for example through the projection of documentaries). Books on energy transition and paradigm change have been presented, and more technical trainings have been proposed on how to make photovoltaic installations, with an easy communicative style to reach the entire population and not only experts; events aimed at children have also been organized, for example storytelling about energy and community resource management, to include the youngest in the cultural revolution that is being promoted through recreational activities

[8] https://ladinamofundacio.org/project/la-diversa/

One of the ECs organized internal trainings to the members of the cooperative, tracing the history of the project, updating on the activities that are being carried out and sharing dissemination material, so that the participants themselves could feel more comfortable when explaining and promoting the EC project.

The steering group of the energy community Gares Bide, in the Basque Country, was born as a result of a training on the use of energy promoted by the city council (in a rural town); this team, once formed, constituted the motor group of the EC and organized specific courses and trainings open to all citizens. In parallel, there is another group that is dedicated to training and organization of environmental activities in the territory, addressing all other issues of environmental protection.

Similarly, the motor group of another EC (Arroyo Alumbra) was born doing energy training with the town's advisory office. Successively, this group was also trained in issues of cooperativism and functioning of the entities (in collaboration with the Escuela de Economía Social andalusa – the Andalusian School of Social Economy), which they included in the workshops proposed to the population. In this EC, the new partners that enter the project must participate in a three modules mandatory training: the first on how to read and properly understand the electricity bill, the second on energy efficiency and energy use, and the third on the operation of the electricity market.

Most of the organized trainings are open to those who want to participate, both people who are already part of the ECs and all other interested neighbors; in some cases, the trainings are aimed at specific social groups. For example, the CE Arroyo Alumbra, which since its creation has been very close to the school of the town where it is (Arroyomolinos de León), collaborated hand in hand with the school to propose formative activities; for example, cooking workshops using solar ovens with children. In another cases ECs organized workshops on how to read electric bills, especially for elder people.

Two ECs in Barcelona (Guinardó i Bordeta) collaborated with a local entity and the City Council of a nearby city (Sant Adrià del Besòs) for a program of orientation and labor reintegration of women victims of gender violence, carrying out a training on cooperativism and photovoltaic.

It is interesting to report that some ECs note that, in many cases, families in vulnerable situations do not participate much in activities and training due to lack of time; they would like to find an inclusive modality to make training and useful sessions aimed at these people.

3.5 Case study of an energy community

Comunitat Energètica del Guinardó

Comunitat Energètica del Guinardó is a project located in the same neighborhood of Barcelona, in the Horta-Guinardó district. It was born from the collaboration of the local SomEnergia group, a cooperative of production and consumption of renewable energies organized in local groups of volunteers, and Rocaguinarda, a cultural and consumption cooperative pre-existing in the neighborhood since 1978. The Energy Community, has been constituted as a group of energy self-consumption in the Rocaguinarda.

The EC has an installation of 21.6 kW, which is currently in the legalisation phase. From the beginning of the project, it was decided to dedicate 10% of the energy generated to people in a situation of vulnerability, assuming the costs among all the other members.

The installation has been located on the roof of a municipal public facility, which has been transferred to the cooperative for a period of 20+4 years; in exchange for the roof cession, the equipment receives, as an exchange, 5% of the energy generated.

The operating model foresees that each participating member makes an initial investment that depends on the power that has an associated one; successively, the members will be able to consume the generated energy without any recurring cost. The initial contribution has been evaluated in 2 €/kW, which includes the investment cost of the power dedicated to vulnerable consumers who, on the other hand, can participate without paying anything.

Three types of packages have been defined: 0.25 kW (for an initial investment of 500 €), 0.5 kW (initial investment of 1,000 €) and 1 kW (initial investment of 2,000 €, for larger facilities and consumers). Vulnerable consumers have free access to the small 0.25 kW package.

In total, the project has 46 participants, 40 of whom have invested in the photovoltaic installation and 6 families participate free of charge thanks to the participations dedicated to participations in vulnerable situations. These families were involved in the project thanks to the collaboration of the PAE, Energy Advice Point, of the district. The PAE is the reference facility, in each district, in terms of addressing situations of energy poverty or vulnerability. They are public (municipal) equipment that caters to users to meet needs linked to the uses of electricity, gas and water. In this case, the PAE has acted as an intermediary with its users to publicize the EC project and the possibility of participating, free of charge, in the project. This contact format worked very well, since in a short time the places that the EC had available were filled and the agreement was closed. Almost all participants are beneficiaries of the social bonus. These people do not have to make the contribution of capital to participate in the project, therefore, they are not considered partners like the others.

With regards to the social base, it is noticeable that the environment is very masculinized, both the motor group and the participants of the energy community. Most of the participants are elderly people, although there is diversity also thanks to the impulse of the pre-existing Rocaguinarda cooperative, which has a very broad social base and enjoys significant trust. It is interesting to stress that the people who went to the EC for the energy poverty project, on the other hand, are mostly women.

4. Main barriers faced by energy communities fighting energy poverty

In the exchange with the energy communities interviewed, barriers have been detected that hinder the approach of energy poverty from the ECs. Grouping different barriers by categories:

Social: it is experiencing the difficulty of reaching diverse social groups, and especially families suffering from energy poverty. Once this contact has been created, it is very difficult for these people to decide to get actively involved in the EC due to lack of time, knowledge, trust or, in general, because they have other priorities that need to be resolved before energy ones. The CEs are working to establish collaborations with local entities that can facilitate this contact, although often creating this link is not easy.

Working with people in a situation of energy poverty is very delicate, and care and stigmatisation attitudes must be avoided within the same community; therefore, it is essential to ensure the anonymity of the members to whom these actions are addressed. In some cases, especially in rural areas and small towns, it is also noticeable that people do not want to be labelled as vulnerable, and receiving aid is not well seen; consequently, in these contexts, the ECs are designing their strategies with a vision of facilitating the times and payment modalities, and not of different or free participation; it is important that each group designs these actions considering these aspects, and the characteristics of the community itself.

An important aspect to take into account, when designing inclusion strategies, is the digital divide between the different generations.

Conceptual: the concept of vulnerability or energy poverty is difficult to define and explain. There is a national definition that relates energy vulnerability with the possibility of accessing the electric social bonus, defined in Royal Decree 897/2017. The criteria used to define vulnerability are, for example, the total income and being a large family.

Anyway, all energy communities are not fully recognized in this definition and want to go further by writing their own definition of energy poverty. This is certainly an added value, but, at the same time, it represents a significant deployment of EC internal resources. All the CEs interviewed consider this stage one of the most interesting and important parts, although difficult; however, one help can be to collaborate with local specialized entities, which have been working for a long time and can know the needs of the neighbors, helping the CE to design its strategy without starting the work from scratch.

In addition, it should be noted that these definitions cannot be univocal, due to the great difference and inequality of resources available in the different regions of the Spanish territory. The instability and insecurity of the rent can also have an impact on these definitions, something that the definitions of vulnerability do not include in their criteria but significantly affect families, both emotionally and in consumer behaviors and decisions.

Bureaucratic: the consequence of this is that all energy communities tried to contact and collaborate with public administrations, which work with vulnerable social groups and have access to both data for the identification of potential users and direct contacts with these people. In all cases, the CEs reported the difficulty of contacting these entities, especially municipalities and social services. The cases of urban and rural CS are very different; in large cities, the risk is that they will not give us answers, take a long time to do so or that they will indicate each other as responsible for these tasks. It is very difficult to get to talk to a person, either because of a lack of answers (it is necessary to continue insisting) or because of excessive bureaucracy. Despite having reached an agreement, the process of signing an agreement may take years. In small towns the same thing can happen, since some CEs have detected difficulties in establishing relationships with public entities; here, in many cases, availability depends on the specific people who take these issues to the city council or to social services. This can make things easier if these people are motivated and added to the EC project, but they can be an insurmountable obstacle if put against them.

Economic: one difficulty of all ECs is to raise economic resources to start the project. In general, the ECs share the view that without public aid, it is very difficult to start such a project. The recommendation is that European subsidies also follow after the Next Generation EU programme, with similar specific aid for energy communities, and with greater intensity of aid (or total) for projects that foresee the participation of people in vulnerable situations.

As far as the participation of vulnerable groups is concerned, this concern is even more acute. In a successful case, EC partners have motivated and put more money knowing that a part of these would go to people with needs, but in other cases it has not been so easy to find additional money to ensure their participation. The ECs do not want to replace or compete with local and national public aid, on the contrary, they want to work in a complementary way with these institutions; one solution could be to promote local economic aid from the city council or social services also through economic contributions to the ECs, to guarantee the participation of families suffering from energy poverty. In this way, the impact of the ECs could be facilitated, easing the position of public institutions.

Administrative: finally, it has become clear that the bureaucratic obstacles that prolong the processes and often make them impossible to carry out: especially, the permits to use the roofs (especially the public ones, and those of the protected buildings or the historical center of the villages), the legalization of the facilities and those of change of the agreements of distribution of shared self-consumption. Normally, the CEs cannot know the status of these procedures during the process, and in many cases, they do not know why they are blocked or rejected. In these cases, very long times and lack of transparency during the process can demotivate members of the energy community, and more evidently vulnerable people who joined to address urgent needs. In this case, it is urgent to make an impact from the bottom up, through networks of energy communities and communities of neighbors, but pressure at national or European level could also be very useful so that the procedures with the municipalities, the responsible entities and especially the distributors are faster and that the state is freely and transparently accessible.

5. Other citizen initiatives

In the national territory there are other examples of popular movements that fight against energy poverty.

In Catalonia, in 2014 was born APE, Aliança contra la Pobresa Energètica (Alliance against Energy Poverty), a social movement that emerged from the motivation of a group of activists, with the aim of mobilizing the social fabric to defend universal access to basic water and energy services. The operation of the APE is based on collective advice, mobilizations in the territory and talks and local actions.

Modality

The APE is an open space for advice and accompaniment (free) and collective empowerment mutual support. Every two weeks the group meets to hold open collective advice sessions; the philosophy is that there is no team of experts who explain how to act to get out of a situation of energy poverty, but that a safe and collective space is created where each participant can explain their case. From this, all the people who participate in the sessions can express their opinion, propose solutions or explain other similar situations. The APE believes that it is fundamental, above all, to publicize the rights that exist and that the law recognizes, and to act jointly.

Its strategy to reach people who may need it is an important presence in the territory, and especially in the neighborhoods. In addition to a good presence in the media and social networks. The main mechanism of diffusion, however, is still the word of mouth: many participants invite family, friends, neighbors and acquaintances. Participation is free, so people can participate without any commitment. In many cases people do not approach easily and live their situation with great shame (sometimes, people have come to share that they had never talked to anyone about these issues); but it is also common for many of these people, once the initiative is known, to remain involved as activists.

Fights

In 2015, a Popular Legislative Initiative (ILP) of the Catalan scope was approved for the protection of the right to energy and housing, Law 24/2015, which was promoted by the APE, the PAH and the ODESCA. In fact, in 2013 the marketers made many electricity cuts throughout Spain; that is why the APE collected signatures to promote a law that protects consumers from this risk, and they managed to pass the law.

Thanks to this law, marketers cannot make cuts of supplies to a consumer without having contacted social services to check that this consumer does not have a risk of residential exclusion report. This report analyzes indicators such as income, the number of people living in a home and eventual disabilities, and has broader criteria than define access to the electricity social bonus at the national level. At the moment, the law only applies to the Catalan territory; currently, work is being done together with other organizations to extend this law to all of Spain.

Compared to the measure described in the first section, on the interruption of cuts throughout Spain due to the pandemic, this law defines includes many more households in the prohibition of cuts, since the criteria are much less strict.

Areas of action

The topics dealt with during the APE advice are very varied and depend on the needs that the participants share in each meeting. In any case, the representatives of the APE explained that most of the blows are related to electricity cuts; most people do not know the law 24/2015, they do not know that they have the right to protection and, in many cases, they have the requirements to request the report of risk of residential exclusion. Part of the advice of the APE is to explain all this and recommend these people go to social services to request the report and protect themselves from cuts.

Another issue being worked on is debt to the marketers. Users who do not cut electricity thanks to this law continue to receive invoices and accumulate debts; in 2021 the Generalitat de Catalunya signed agreements to cover these accumulated debts in previous years, and is currently extending this agreement (until 2023). In any case, this process causes many uncertainties to users, who in many cases prefer to pay these debts reducing other expenses for other basic needs such as food, often compromising other basic needs. The APE is fighting for private companies to cover these debts, instead of covering them with public money.

The APE recognizes that for vulnerable households energy poverty is closely linked to housing issues and household habitability problems; these families usually live in very old buildings, with very low energy efficiency conditions and urgent renovation needs.

The vast majority of these families live in a rental situation, which limits the possibilities of acting to bring improvements autonomously; in many cases, the owners of the flats have no interest in investing to improve their conditions, which gives these people little room for action towards an improvement in their thermal comfort conditions.

It is important to note that, in the few cases in which this possibility of action exists, the investment of vulnerable households also depends on the availability of dedicated aid, since their condition of vulnerability implies a difficulty in making these large investments autonomously. Although this type of aid is available, the protocol usually prevents the advance of the investment by the beneficiaries, who will receive the money from the aid to finished work (sometimes, it can involve a waiting period up to one or two more years). All these factors represent significant barriers when implementing renovation projects that can really improve the conditions of buildings and their energy efficiency.

Relationship with ECs

This popular initiative has long been discussing how to collaborate with local energy communities to maximize the benefits to neighbors. One of the concerns is that energy communities are not wanted to reproduce the same dynamics and existing roles; one barrier is that many times the CEs are formed by people with a good economic situation, who can afford to take on small investments, risky and with

availability of time. It is essential to prevent the ideal of inclusivity from moving too far away from the reality of the EC. Another important thing is not to stigmatise the most vulnerable people, and that they do not feel treated in a different way or care. Therefore, the issue of anonymized is crucial to ensure that their participation is equal to that of other members.

On the other hand, the presence of these transversal popular initiatives in the territory is an opportunity for energy communities, which can take advantage of the dynamics, networks, trust, battles and knowledge that is generated between these groups to take root even more in the territory, and do so in a complementary way so as not to repeat work and advance jointly.

6. Conclusions and recommendations

From the interviews with these CEs, common conclusions and recommendations can be drawn, which can be summarized with the following considerations.

Collaborations and networking

- It would be important to recognize the role of the ECs as a fundamental element for the national strategy against energy poverty. The European Commission should recognize their role and push countries who still don't recognise them to do it.
- It is very useful to collaborate with other local entities, other ECs, exchange ideas, experiences and resources, to optimize efforts, learn from each other and reduce errors.
- It is essential to promote public-community collaboration, and allocate public resources to long-term projects, with the ECs as actors that implement them. National governments, lead by the European Commission, should favour this process through guidelines and direct engagement.
- It is very difficult to work with public entities. It can be easier in small villages, although it depends on the will of natural people, but in the urban environment it is very complicated and long. It is recommended to facilitate this collaboration, removing bureaucratic obstacles and making the contact process much simpler and faster.

Addressing vulnerability

- It is very delicate to talk about energy poverty and vulnerability, especially in rural areas; the same treatment must be ensured for all partners, regardless of their socio-economic conditions.
- It is essential to work to anonymize data, not work from a care approach; the EC must really include diversities, without stigmatizing or reproducing social dynamics that are to be overcome.
- The first step is to make known what people's rights are, what tools and aids already exist, before creating new ones.

- When thinking about measures, thinking about them from the beginning from people affected by energy poverty, and not from outside. It is important that people can participate in the whole process.

Structure of the EC

- The success of a project of this type depends on the presence of motivated people who carry out the project.
- Having a hired person who can dedicate himself to projects is fundamental for the functioning of the EC, and to be able to enter into energy poverty projects.
- It is necessary to maintain and increase funding for energy communities, both public and from the European Union, since the economic and financing barriers are very large, especially when projects start. The European Commission should replicate and increase the tools developed in the past, such as the NextGeneration, that are locally managed by each country in order to support ECs in their territory. Ethical finance entities are also key to the implementation of projects.

7. Biography

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