GENDER4POWER

The citizens' fight against energy poverty

The role of energy communities and other citizen initiatives in Germany

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Table of Contents

List of Tables 3
Acronyms 3
Introduction and methodology 4
I/ Energy poverty and the measures to tackle it 6
II/ Energy communities facing energy poverty 9
a. Inclusiveness and participation measures 9
b. Access to energy 12
c. Rehabilitation and energy-efficiency 15
d. Citizen empowerment and training 17
e. Case study of an energy community 19
III/ Main barriers faced by energy communities fighting energy poverty 20
a. Barriers to creating inclusivity and participatory measures 21
b. Barriers in providing affordable access to energy to everyone 22
c. Rehabilitation and efficiency 23
d. Empowerment and training 24
IV/ Other citizen initiatives 25
V/ Recommendations and Conclusions 26
Recommendations 26
Recommendations for national decision-makers 26
Recommendations for municipal actors 27
Recommendations for energy communities 27
Recommendations for social institutions 28
Conclusion 29
References 30

List of Tables

Table 1: Overview of the interviewees 5
Table 2: PV Portfolio of BENG split up in Type Full Feed-In, Direct Consumption, Tenant Electricity 20

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

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].

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

[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*.

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.

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

[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.

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.

a. Inclusiveness and participation measures

Reaching People Affected by Energy Poverty

[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).

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.



Source: 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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