

FINAL REPORT //

Territorial Analysis of Decentralised Energy Markets (TANDEM)

Policy Brief // August 2025

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The final version of the report will be published as soon as approved.

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Executive Summary

1 Executive Summary

Energy communities have emerged as key instruments in Europe's pursuit of a **fair and inclusive energy transition**. Recognised for the first time in EU legislation through the Clean Energy Package, Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs) are now legally defined actors in the energy market. Energy communities offer a unique model of **collective ownership and democratic governance** that can contribute to public acceptance and investment in renewable energy deployment, energy justice, as well as local and regional development and cohesion.

Despite the legal progress embodied by the acknowledgment of RECs and CECs at EU level, many Member States have yet to establish **robust enabling frameworks** for energy communities. The potential of energy communities, particularly to pursue social inclusion (e.g. engage disadvantaged households) and to provide equal opportunities across territorial contexts (e.g. urban versus rural), remains unevenly realised. The ESPON TANDEM project aims to address this implementation gap by investigating the conditions under which energy communities can thrive, focusing on social inclusiveness, territorial development, and the integration of market services.

This research shows that energy communities have the potential to drive a just and sustainable energy transition, but their emergence and inclusiveness are not automatic. Their success depends on a combination of enabling conditions (such as financial support, institutional strength, social trust, and renewable infrastructure) as well as deliberate efforts to align governance and funding with social objectives. With the right support, energy communities can become resilient, community-driven models that balance equity, participation, and market realities.

Based on this analysis, the brief offers **10 targeted policy recommendations**:

1. **Local informational support**, including regional or local one-stop-shops, and targeted guidance, could be provided to different local actors relevant to the development of energy communities;
2. **Dedicated policy incentives to support delivery of social inclusiveness objectives in energy communities**, such as financial, technical, administrative and legal support, and collaborative partnerships with actors that already engage disadvantaged and vulnerable groups.
3. **Local knowledge-sharing and promotional activities** in less developed regions to inform the general public and local governments on the benefit of community-owned renewable projects, along with broader access to existing information tools.
4. **Promotion of co-ownership/co-development models between commercial RES developers and energy communities/citizens** for larger projects. This can be supported via targets set at regional/local level, as well as the development of targeted incentives that promote co-ownership.
5. **A "Tech-Support Program" to boost the digital and technological capacity of less developed regions for energy community formation** in combination with the development of step-by-step guides and trainings with expert facilitators to ensure the available tools and knowledge can be used by citizens and municipalities independently.
6. **Expand and simplify access to subsidies and financial instruments for energy communities**, while ensuring they are tailored to the unique needs of community-driven, socially inclusive energy projects.
7. **Ensure that policies around the development of energy communities allows for initiatives that can cover a regional approach**, including through adoption of definitions that allow for it.
8. **Include energy communities in mapping and planning** around the development of renewable energy production technologies at the local and regional levels.
9. **Responsibility can be assigned to a national body to register, monitor and oversee energy communities**. Otherwise, a non-governmental organisation could be funded to undertake this responsibility.
10. **Ensure registration procedures for energy communities are clear, transparent and simple**, for initiatives that have already been established using a legal form that would qualify as an energy community.

With the right policy support, energy communities can become powerful vehicles for a democratic, resilient, and socially just energy transition across Europe.



Introduction

2 Introduction

The Clean Energy for All Europeans Legislative Package (CEP), which includes the Internal Electricity Market Directive 2019/944 (IEMD) and Renewable Energy Directive 2018/2001 (REDII), introduced two new concepts of energy communities referred to as **Citizen Energy Communities (CECs)** and **Renewable Energy Communities (RECs)**.¹ The IEMD and REDII acknowledged, for the first time, the role of **community ownership** of renewable energy production and related services in helping the EU meet its climate and energy objectives while also driving local social innovation.

RECs and CECs bring together natural persons, local authorities, and businesses together in a legal entity to organise different activities in and around renewable energy production, according to specific characteristics, including:

- Specific ownership and governance principles that promote democratic decision making among members;² and
- A primary purpose to deliver environmental, social and economic benefits for members and the local community.³

Despite some differences between the RECs and CECs definitions,⁴ they represent the same core concept, namely a way to organise **collective and democratic ownership** around particular energy-related activities and services. In this way, they contribute to a just transition by empowering local communities with ownership of renewable energy sources and by helping to promote energy justice.⁵ According to the IEMD, CECs can focus on providing **affordable renewable energy** for their members or shareholders rather than on prioritising profit-making, and enable certain groups of household customers to participate in the electricity markets, who otherwise might not have been able to do so.⁶ RECs are also acknowledged to help advance energy efficiency in households and help fight **energy poverty** through reduced consumption and lower supply tariffs.⁷ Locally, RECs can also contribute to local acceptance of renewable energy and access to additional local investment, more choice for consumers, and greater participation by citizens in the energy transition.⁸

EU Member States were required to transpose the provisions of the REDII and the IEMD by 30 June 2021 and 31 December 2020, including the definitions of energy communities, alongside the development of concrete **enabling frameworks** allowing for their market participation without discrimination compared to other market actors.⁹ Most Member States transposed some EU rules on energy communities, including around the definitions. Due to various approaches taken across different countries, a diverse and even growing number of different types of energy communities are being realised across the EU. Over the past years, many projects and

¹ Article 2(16) of Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast), OJ L 328, 21.12.2018, p 82 (REDII), and Article 2(11) of Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast), OJ L 158, 14.6.2019, p 125 (IEMD), respectively.

² Article 2(16)(a) REDII requires RECs to be based on open and voluntary participation, autonomous from individual members and other traditional market actors that participate in the community as members or shareholders, or who cooperate through other means such as investment, Article 2(11) IMED requires CECs to be based on open and voluntary participation.

³ In this respect both Article 2(16) RED II and Article 2(11) IMED are both identical.

⁴ RECs are intended to be rooted in the local or regional ownership and “effective control” of renewable energy production (not limited to electricity), although they are allowed to undertake other activities. CECs, on the other hand, do not need to be rooted in a specific geographical context, and operate only in electricity. Participation in a REC is also limited to small and medium enterprises (SMEs), while CECs do not place a limit on the size enterprise, as long effective control still remains with entities that qualify as a small enterprise (i.e. medium and large enterprises are prohibited from exercising control).

⁵ Bauwens, et al., 2016; Brummer, 2018; Dóci et al., 2015

⁶ IMED, Recital 43.

⁷ REDII, Recital 67.

⁸ REDII, Recital 70.

⁹ Article 22 paragraph 4 REDII and Article 16(1), respectively.

studies tried to map energy communities in Europe and studied their role in promoting renewables deployment and local development, while tackling some of the social challenges related to the energy transition.¹⁰

The literature on energy communities acknowledges **challenges** as the concept evolves around Europe. Although **territorial development** is often one of the direct effects of energy communities, academic literature has pointed to their need to evolve and incorporate additional activities for the strengthening of such role.¹¹ While social benefits engendered in energy communities' activities should remain the principal objective of established RECs and CECs, as they evolve they may no longer be seen as solely providing an energy generation/consumption service as their only social purpose. Several examples from across the EU demonstrate the engagement of energy communities in different market services, such as flexibility and grid stability. Additionally, different European regions face different challenges when accessing funds and despite governmental support being a key in supporting the upfront capital investments, the situation still is unbalanced.

The TANDEM project was tasked with addressing identified research gaps on energy communities, such as:

Figure 2.1
Research Gaps on Energy Communities



The project investigated and collected important evidence in the attempt to close such gaps. TANDEM focused specifically on the conditions for **an efficient and inclusive uptake of energy communities, looking at both the legal frameworks and the market.**

¹⁰ European Committee of the Regions: Commission for the Environment, Climate Change and Energy, Milieu Ltd, Gancheva, M., O'Brien, S., Crook, N. et al., Models of local energy ownership and the role of local energy communities in energy transition in Europe, European Committee of the Regions, 2018, <https://data.europa.eu/doi/10.2863/603673>; Caramizaru, A. and Uihlein, A., Energy communities: an overview of energy and social innovation, EUR 30083 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-10713-2, doi:10.2760/180576, JRC119433 Energy Communities Repository https://energy.ec.europa.eu/topics/markets-and-consumers/energy-consumers-and-prosumers/energy-communities/energy-communities-repository-products_en

¹¹ Bireselioglu et al., 2021; Mendicino et al., 2021

WHAT DO WE MEAN BY SOCIAL INCLUSIVENESS?

In the literature, social inclusiveness can mean different things. It can pertain to pursuing gender, age, as well as other characteristics of diversity such as bridging income-related gaps, for instance for those that experience vulnerability or energy poverty. For the purposes of TANDEM, we focus on the latter – through the idea that RECs and CECs pursue social inclusiveness so low-income and vulnerable households do not get left behind. Hence, we define social inclusiveness as the share of disadvantaged households in the energy community compared to the wider region. Given ESPON's focus on territorial development and cohesion, TANDEM also looked at territorial inclusiveness, ensuring that citizens can benefit from RECs and CECs regardless of where they reside.

The policy brief proceeds as follows. Section 1 lays out the policy questions that the TANDEM consortium was asked to help answer. Section 2 summarises the results of the research tasks, and the evidence and analysis of the data and information that was gathered. From this analysis, Section 3 proposes policy recommendations on how to address challenges of promoting inclusiveness in energy communities, encouraging their uptake, improving spatial settings and integrated territorial development approaches for promoting the growth of energy communities, and evolve improving data collection efforts on energy communities.

2.1 Policy questions to be answered by TANDEM

Member States are required to assess the potential and barriers to the development of RECs at the national level,¹² while national regulatory authorities for electricity have a duty to monitor the removal of unjustified obstacles to and restrictions on the development of consumption of self-generated electricity, energy sharing, renewable energy communities and citizen energy communities.¹³

Many Member States have yet to put in place enabling frameworks to promote the growth of RECs and CECs at the national level. As these policy frameworks continue to be developed, it will be important to ensure that they are justified based on the delivery of the political ambition that was expressed in the creation of energy communities, namely an inclusive energy transition where citizens and local communities are empowered and benefit.

To aid these national implementation efforts, the main objective of TANDEM was to draw a policy trajectory for the efficient and inclusive uptake of energy communities, considering both the facets of different national frameworks and the spatially asymmetric developments in key drivers for decentralised energy markets, such as telecommunications, energy storage facilities, and renewable energy, among others. The research includes four main objectives (Figure 2.2).

¹² Article 22(3) REDII.

¹³ Article 59(12)(z) IMED revised through Directive (EU) 2024/1711, Article 2(12)(a)(ii).

Figure 2.2
TANDEM's 4 main objectives



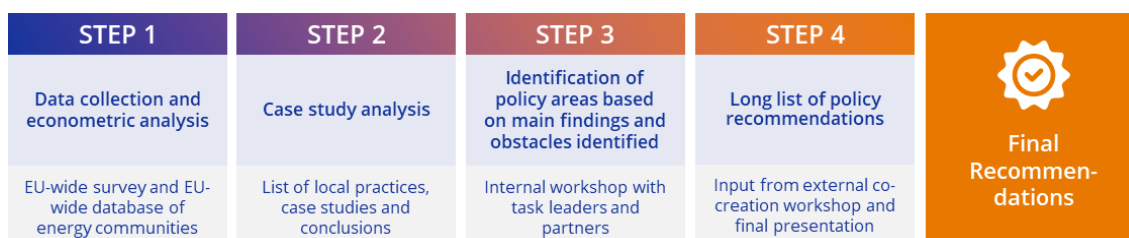
Based on the findings derived from the research tasks, we were asked to develop policy recommendations on the following aspects:

1. Advising on alternative formats to facilitate energy communities and resolve issues of social inclusiveness;
2. Identifying actions that have a significant effect on the deployment of energy communities while at the same time guarding an inclusive uptake;
3. Deriving conclusions on the most favourable spatial settings for both functioning as well as social and environmental benefits of the energy community; and
4. Examining the role of integrated approaches for territorial development (i.e., Integrated Territorial Investments, community-led local development - CLLD) on the emergence and inclusiveness of energy communities.

2.2 Methodology

The findings and policy recommendations developed in this policy brief are the results of the process shown below.

Figure 2.3
TANDEM's process of assignment



With this participatory approach, involving around 30 external stakeholders working on community energy topics/for energy communities at the national, regional and local levels, we aimed to ensure the policies suggested were not only relevant to address the challenges highlighted by TANDEM's research, but also inclusive of the perspective of actors from the field, to avoid posing unnecessary burden to community energy projects around Europe.



Characteristics of European energy communities

3 Characteristics of European energy communities

Previous research on energy communities was usually undertaken by means of case studies. As a result, no large-scale European overview of the characteristics of energy communities existed. TANDEM fills this gap with a large-scale online survey among European energy communities. In total, 641 European energy communities responded to the survey – of which 250 fully answered the questionnaire.

Energy communities: diverse, small-scale and volunteer-based

European energy communities vary in size, but most are relatively small and rely heavily on volunteers.

In terms of human resources, the median number of full-time staff (including volunteers) is only about two persons, and about half of the communities rely exclusively on volunteers. Membership size also varies widely. Some communities consist of only a few dozen households in a local neighbourhood, while others have several thousand members. Less than 20% of the energy communities have more than 500 household members.

Most energy communities operate small-scale renewable systems (median 300 kW), but some reach utility-scale (up to 36 MW). A small share of energy communities focuses on non-production activities like energy advice, education, and awareness-raising.

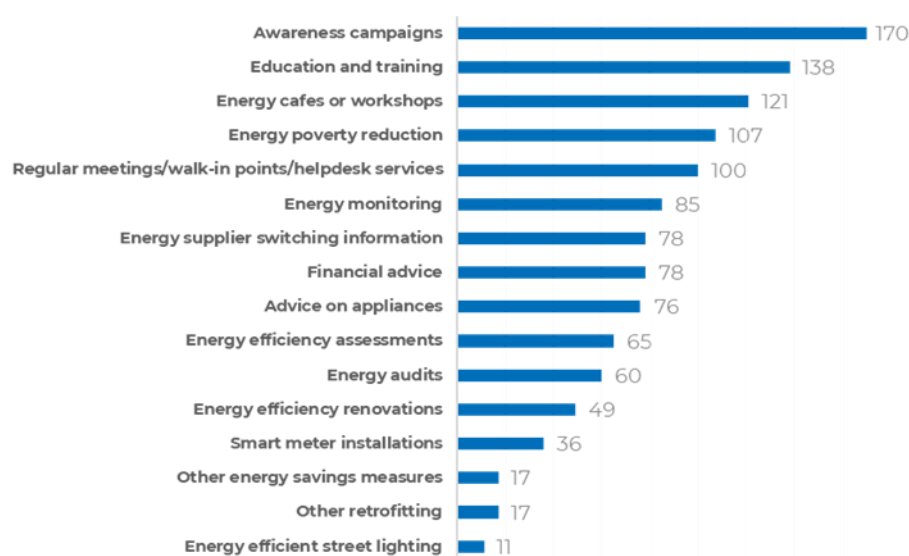
The cooperative model dominates (47%) followed by associations (21%), informal groups without legal form (~7%) and non-profit enterprises owned by consumers (~6%). For the remainder of the communities, the legal form was unknown.

Multi-dimensional objectives: environmental, social, and economic

Most energy communities pursue a blend of environmental, social, and economic objectives. Environmental (ecological) goals are almost always among these objectives, cited by 82% of the energy communities. Social goals (such as community empowerment, energy democracy, or reducing energy poverty) are also very prominent, cited by approximately 74%. Economic goals (e.g., lowering members' energy costs or local economic development) were mentioned by around 63%.

Figure 3.1

Services offered by energy communities in Europe (N=347)



Source: ESPON TANDEM survey (2024)

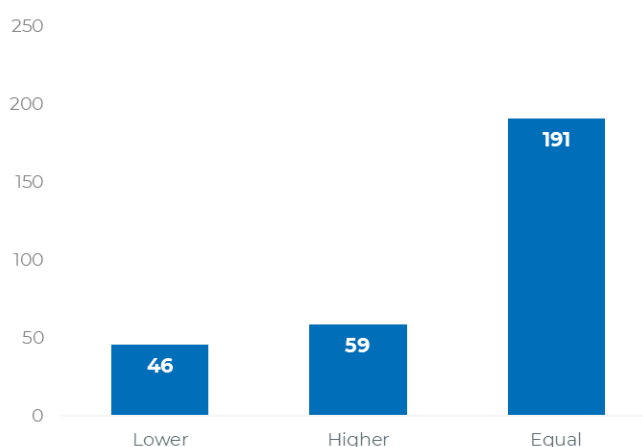
In terms of the types of services energy communities provide, these include sharing knowledge through awareness campaigns (49%), education and training on energy-related topics (40%), energy cafes or work-shops (35%) and meetings, walk-in contact points and helpdesk services (29%), as well as more specific information about appliances, available subsidies or tax measures. Notably, a significant share (31%) of communities provides services to reduce energy poverty (more on this in a later section). About 24% engage in energy monitoring (helping members track and reduce their energy usage).

Degree of social inclusiveness among energy communities is limited but not negligible

The majority of energy communities do not significantly differ from their surrounding population in socio-economic terms – around two thirds of communities reported that their members' social status is roughly equal to the regional average. This suggests inclusivity in the sense that their members reflect the population of the wider region, but without positive discrimination.

Figure 3.2

Social status of households in energy communities, compared to wider region (N=296)



Note: based on assessment by energy communities. Source: ESPON TANDEM survey (2024)

Meanwhile, about 16% of communities indicated that their member households have a lower social status than the wider region. These are the communities we can consider as particularly socially inclusive, as they have managed to engage relatively more households from disadvantaged backgrounds.

Importantly, the survey data suggests that this pattern of social inclusiveness is fairly homogeneous across different countries and locales. While one might expect differences between, energy communities in urban and rural communities, the share of communities in each category (lower/equal/higher status) did not vary significantly by urbanisation degree.

Policies for vulnerable groups prevail, but do not usually provide financial support

41% of energy communities report that they have explicit policies or initiatives to involve disadvantaged or vulnerable groups. This is a relatively high share of all energy communities.

By far the most targeted group is low-income households – about 77% of communities with a vulnerable-group policy include low-income families as a priority. This aligns with the notion that tackling energy poverty (which is largely income-driven) is a key motivation for many. A much smaller subset of communities extends their inclusiveness policies to demographic groups: about 14% (also) explicitly target women (e.g. addressing gender inclusiveness in energy) and similarly about 14% target young families. About 12% mentioned people with a migrant background as a target group.

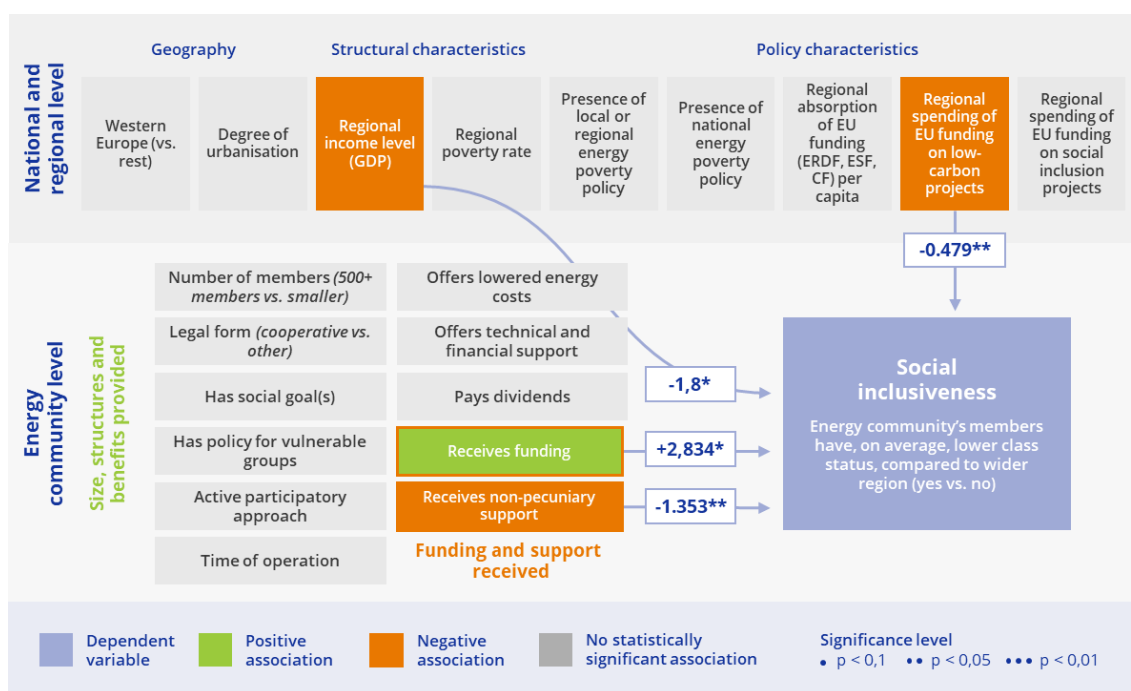
Direct financial benefits to members are not universally provided – only a subset of energy communities can offer these at the moment. About a third of energy communities offer cheaper energy and about 13% paid out

dividends in 2023. More commonly, the “benefits” of energy communities lie in collective and long-term gains: access to clean energy, community empowerment, environmental stewardship, and knowledge sharing.

Drivers of social inclusiveness in energy communities

To determine what potentially drives social inclusiveness within energy communities, an econometric model was specified. The results can be seen in Figure 3.3.

Figure 3.3
Model of social inclusiveness in European energy communities



Based on the results, we draw the following main conclusions:

- **Funding for energy communities is an important policy instrument to increase social inclusiveness.** Energy communities which have received or currently receive financial support (from government or other sources) are more likely to be socially inclusive. A financially supported community is over five times as likely to report that many of its members have a lower social status relative to the regional average.
- **Energy communities appear to be unsuccessful in utilising non-financial support (such as expertise) to attract vulnerable groups,** as the results show a negative relationship with social inclusiveness. A possible reason is that well-connected, resource-rich communities are more able to secure technical help, while communities composed of very disadvantaged people may lack access to those support networks.
- **Larger size does not equate to greater inclusiveness** – in fact, smaller initiatives sometimes had a stronger focus on vulnerable groups.

Energy communities can be seen as potential allies in the fight for a just energy transition, even if their current direct impact on vulnerable households is modest. With the right nudges (policies, support), their impact could be amplified.



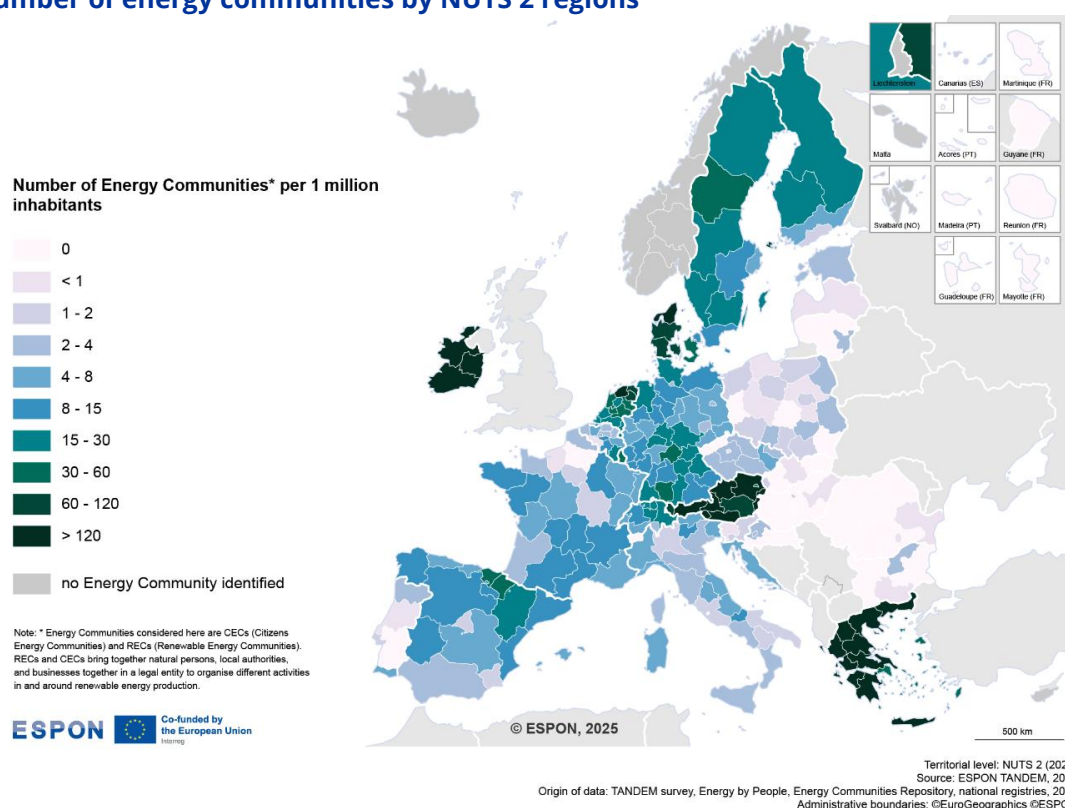
Explaining the regional distribution and enabling factors of energy communities

4 Explaining the regional distribution and enabling factors of energy communities

Map 4.1 shows the territorial distribution of energy communities across European NUTS-2 regions. The number of energy communities varies substantially across the continent, ranging from more than 230 in certain regions of Greece, Ireland, and Austria, to fewer than 20 in parts of Sweden, Bulgaria, and other Eastern European countries. In some Eastern EU regions, no energy communities have been identified at all.

This variation is not only observed across countries but also within them. For example, in Spain, regions such as the Basque Country and Catalonia report over 60 energy communities, while others (i.e. Asturias and Cantabria) register fewer than 18.

Map 4.1
Number of energy communities by NUTS 2 regions



To better capture and compare this territorial diversity, Figure 4.1 shows the regional average of energy communities by European macro-region, using the number of energy communities per 100,000 inhabitants. **Western and Northern Europe exhibit the highest density**, with approximately 2.4 energy communities per 100,000 inhabitants, followed closely by Southern Europe, which records around 1.8. In stark contrast, **Eastern Europe lags significantly behind**, with only 0.1 energy communities per 100,000 inhabitants.

This territorial heterogeneity highlights the **diverse socio-political, economic, and institutional contexts in which energy communities emerge and operate**, pointing to the importance of local enabling conditions in shaping the uptake of community energy initiatives.

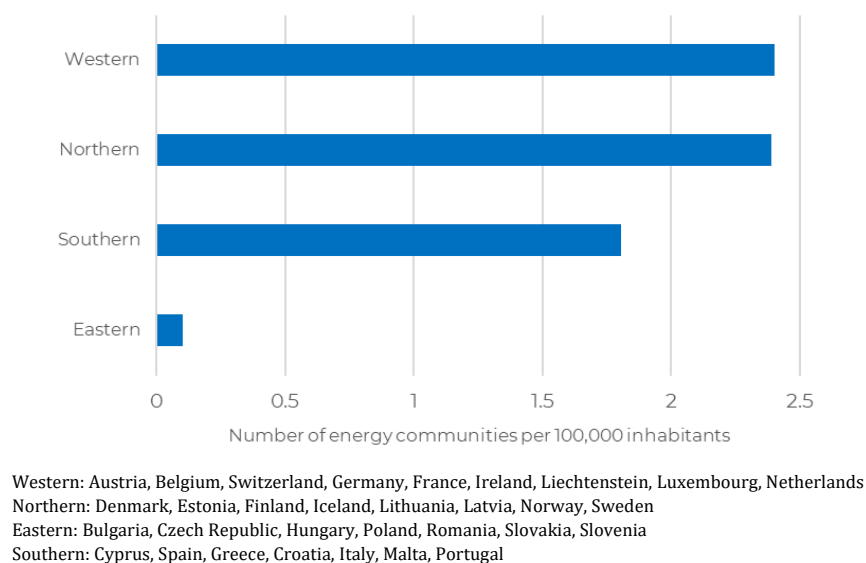
Figure 4.1**Regional average of energy communities per 100.000 inhabitants by European region**

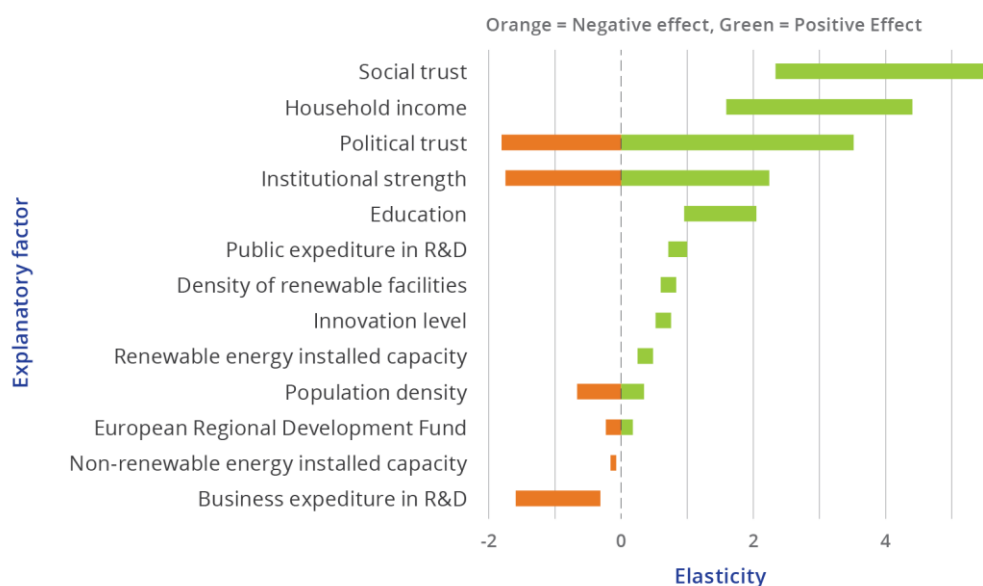
Figure 4.2 presents a synthesis of the key factors found to have a statistically significant relationship with the presence of energy communities across European regions. Each factor is represented by the range of estimated coefficients observed across the different model specifications, capturing both its direction and intensity of association. While many variables show consistent effects, others (such as political trust) exhibit variation depending on the regional context, acting either as enablers or as barriers.

The variable displaying the highest observed positive effect is **social trust**. This factor remains a robust and consistent predictor of energy community formation in Western, Eastern, and Northern Europe, with the strongest effects seen in Western regions. As an indicator of social capital and cooperative norms, social trust plays a fundamental role in enabling collective action.

The second most influential factor is **household income**. Wealthier regions, where households enjoy higher disposable income, tend to show a stronger presence of energy communities. This likely reflects the financial capacity of residents to make the high upfront investments typically required for community energy projects, such as solar PV systems, storage, or grid interconnection. However, this raises **equity concerns** – if participation in energy communities is implicitly limited to those who can afford such investments, lower-income households may be excluded, reinforcing existing inequalities in the energy transition.

Political trust displays a more complex and context-dependent pattern. In Western Europe, political trust is positively associated with energy community formation, suggesting that trust in political institutions can enhance community-led action when aligned with participatory governance and supportive policy frameworks. In contrast, the relationship is negative in Southern Europe, indicating that energy communities may arise as grass-roots responses in environments where political trust is low or the political agenda is not aligned with communities needs/interest.

Figure 4.2
Drivers of energy communities



Institutional strength, while it emerges as a significant predictor of energy community formation across all macro-regions, shows regionally differentiated effects. In Western, Eastern, and Northern Europe, higher institutional quality is associated with greater energy community uptake, likely due to better governance, more transparent processes, and targeted support mechanisms. Western Europe again shows the strongest positive relationship, reflecting its mature institutional landscape and well-aligned regulatory systems. Conversely, in Southern Europe, institutional strength shows a negative relationship with energy community presence. This possibly reflects a disconnect between institutional effectiveness and the actual implementation of community energy policy, or institutional rigidities that hinder bottom-up initiatives.

Factors linked to **education** and **public-sector R&D** also emerge as positive drivers of energy community development. These variables reflect the importance of a knowledge-based, innovation-oriented ecosystem in supporting energy communities. In contrast, **private-sector R&D** shows a significant negative association. This may be explained by the profit-driven nature of private innovation activities, which often favour scalable, proprietary technologies that are less compatible with the decentralised and participatory principles of energy communities.

The **density of renewable energy infrastructure** is another key enabling factor. Regions with a higher number of renewable energy installations per capita tend to host more energy communities, likely because distributed generation technologies are more compatible with local ownership models. Moreover, a dense renewable infrastructure network may reflect the presence of a **mature market for renewable energy**, supportive regulation, and experienced service providers - all of which reduce entry barriers for community-led projects.

Finally, the role of **European funding**, particularly through the **European Regional Development Fund (ERDF)**, is complex. While ERDF payments are typically targeted at less developed regions, these areas often lack the institutional strength or governance conditions necessary to translate funding into effective energy community support. Our models reveal that in regions with high institutional strength, ERDF funding is significantly and positively associated with energy community formation. However, where institutional capacity is weak, funding appears to have little or negative relationship. This finding suggests that funding alone is not sufficient - what matters is the capacity of institutions to channel resources towards energy community-led initiatives effectively.

Taken together, these findings underscore that **trust, institutional quality, financial capacity, and renewable energy infrastructure are central enablers of energy communities**. However, their effectiveness is deeply shaped by regional context. Factors that function as enablers in one region may act as barriers in another, depending on the institutional, social, and regulatory environment. This highlights the importance of adopting a territorial-based approach to policy design and support for energy communities.

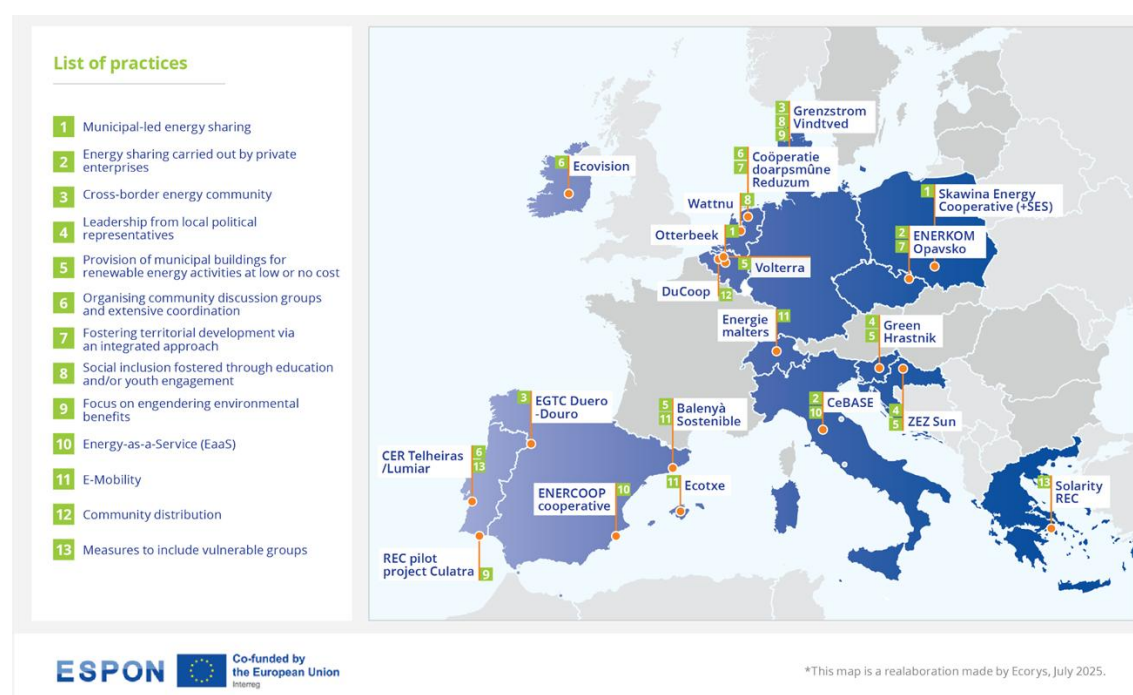


Case study insights

5 Case study insights

By examining a diverse range of 20 case studies located across Europe, the quantitative results were complemented with qualitative **case study analysis**, based on desk research and interviews with community representatives, seeking to uncover the key factors that influence the success, inclusiveness, and sustainability of energy communities. A particular focus was placed on how specific local practices (each characterising a specific approach or condition) impact the establishment and growth of these communities as well as the specific objectives they can help the energy community achieve.

Figure 5.1
Overview over 20 case studies of 13 local practices



The comparative analysis of 20 case studies showed that factors influencing the formation and success of energy communities across Europe are diverse yet interconnected. They revealed how the emergence and success of energy communities across Europe are shaped by a multifaceted combination of financial support mechanisms, social inclusion strategies, and alignment with broader sustainability goals. Common themes emerging across diverse national and local contexts included the importance of targeted subsidies and tailored financial instruments, efforts to include vulnerable groups, the integration of non-profit values within competitive energy markets, and a territorial approach to energy transition.

The analysis of the case studies revealed several overarching observations relevant to the development and success of energy communities:

1. The importance of partnerships emerged as a key factor, particularly when pursuing objectives such as the inclusion of vulnerable groups, environmental objectives or social acceptability. Partners can provide the energy community with specific expertise and support the trust-building process, which complement committed volunteers in the energy community as well as its members' experience.
2. The activities of energy communities are often tailored to fit within the constraints and opportunities of their respective national regulatory frameworks, highlighting the need for context-sensitive approaches. However, despite these differences, many of the practices observed were transferable and can be adapted to different circumstances, offering valuable insights for replication elsewhere. Third, across all contexts, energy communities were consistently identified as social organisations driven by community objectives, emphasising the centrality of community engagement, inclusivity, and collective benefit in their missions.

The comparative analysis highlighted how energy communities are interacting with support measures, market realities, and how they can realise a variety of local impacts:

- **Relevance of subsidies and financial instruments:** Both subsidies and financial instruments are important in supporting energy communities across different stages of development. Grants and feed-in tariffs are especially crucial in the early phases, reducing upfront costs and de-risking investments. As such, grants help launch operations, while feed-in tariffs and PPAs ensure long-term financial stability. As energy communities mature, financial tools like soft loans and rolling funds, often with advisory support and risk mitigation, become essential, especially when energy communities struggle to access conventional financing. The evidence suggested that a tailored mix of subsidies and financial instruments enhances financial resilience and scalability.
- **Social inclusiveness:** Energy communities promote social inclusion through formal and informal mechanisms, depending on local capacity and context. Formal inclusion involves direct support for vulnerable households, granting them full membership. Informal strategies focus on outreach, education, and facilitating access to energy efficiency grants. For both approaches success often hinges on embedding social goals early, leveraging local partnerships – particularly to provide necessary funds for formal inclusion – and aligning with public policies. However, trade-offs exist, particularly when efforts to be inclusive strain financial resources or divert from other priorities.
- **Reconciling non-profit and market logics:** Energy communities constantly navigate the balance between non-profit missions and market realities. They partner with public institutions and ethical financiers to retain alignment with community values, while also engaging local businesses to meet technical needs while supporting the local economy. Internally, they manage the tension between affordability and revenue generation, especially when supporting vulnerable members. Transparent pricing, participatory governance, and mission-aligned partnerships help maintain this balance. Hence, whether focusing on internal energy sharing or selling surplus power to fund social initiatives, reconciliation between market and community logics is possible through intentional governance.
- **Integrated Territorial Development:** The territorial embeddedness of energy communities strengthens their capacity for local impact, particularly when linked to structures like Local Action Groups (LAGs) and Integrated Territorial Investments (ITIs). In such cases, local governments and rural development initiatives facilitate energy community establishment and align them with broader sustainability goals. While these models offer funding and legitimacy, inclusiveness is not always explicitly addressed. Nonetheless, public-private partnerships and stakeholder engagement mechanisms offer potential foundations for equitable community involvement, even if inclusivity is not a primary focus.
- **Environmental Contributions:** Energy communities contribute meaningfully to environmental goals, primarily through renewable energy generation, self-consumption, and energy efficiency. Initiatives also include awareness campaigns, behavioural change efforts, and support for electric mobility through charging points and car-/bike-sharing options. In some instances, communities engage in broader environmental stewardship (i.e. biodiversity and land conservation) positioning energy communities as holistic agents of ecological transformation. These efforts are particularly effective when aligned with local values and supported by environmental partnerships.



Conclusion

6 Conclusion

This research offers a comprehensive view of the development and inclusiveness of energy communities across Europe. While energy communities hold significant promise for contributing to a just and sustainable energy transition, findings from our quantitative analysis (Chapter 2 and 3) and the case studies (Chapter 4) reveal that inclusiveness is often limited and highly dependent on context, support mechanisms, and governance structures.

The main conclusions regarding social inclusiveness of energy communities include:

- Social inclusiveness is driven primarily by **financial support** (e.g. subsidies, loans), regional income levels, and dedicated energy poverty policies.
- **Non-financial support**, while present, does not show a positive impact, possibly due to implementation gaps rather than inherent ineffectiveness.
- **Formal inclusion mechanisms and strong public partnerships** seem to enable deeper integration of vulnerable groups, while informal outreach strategies remain helpful but insufficient on their own.

Taken together, these insights show that energy communities are not inherently inclusive, but with the right financial incentives, multilevel governance approaches, and contextual alignment, they can be shaped into powerful instruments of social equity and territorial resilience.

The main factors which enable energy communities emergence included:

- **Social trust** is the strongest predictor of energy community formation.
- **Household income** is a major driver of energy community presence, as wealthier regions are better positioned to support the upfront investments required for participation.
- **Institutional strength** and political trust shape energy community emergence. However, these factors vary across regions, underscoring the need for place-based policy approaches rather than one-size-fits-all solutions.
- **Territorial embeddedness and infrastructure** further enable energy community growth. Regions with a high density of renewable infrastructure and integration into local development frameworks (e.g., LEADER, LAGs) show greater energy community success. However, territorial strategies must prioritise inclusion explicitly to avoid reinforcing inequalities.
- **Financial viability** remains a core challenge for the emergence and development of energy communities. They require tailored, context-specific funding instruments, ranging from early-stage grants to stable long-term revenue models. Where market pressures grow, transparent governance and alignment with value-based partners help balance their financial and social goals.

The research also showed that energy communities face inherent tensions between their non-profit, socially driven missions and the commercial realities of operating in energy markets. Energy communities often rely on partnerships with public authorities, NGOs, and ethical financial institutions to align market engagement with social values. Trade-offs emerge when inclusiveness challenges financial sustainability, especially in communities serving vulnerable groups. Participatory governance and transparent decision-making are key tools for managing these tensions.

This research shows that energy communities have the potential to drive a just and sustainable energy transition, but their emergence and inclusiveness are not automatic. Their success depends on a combination of enabling conditions (such as financial support, institutional strength, social trust, and renewable infrastructure) as well as deliberate efforts to align governance and funding with social objectives. With the right support, energy communities can become resilient, community-driven models that balance equity, participation, and market realities.

Nonetheless, this study's findings should be interpreted with several limitations in mind. The definition of social inclusiveness used was primarily socio-economic, excluding other dimensions like demographic or democratic inclusion. The survey sample was geographically imbalanced, with limited representation from Eastern Europe, potentially affecting insights into regional variations. Additionally, reliance on the number of energy communities as the main unit of analysis, due to limited and inconsistent data on aspects like scale or impact, restricts the

depth of interpretation. The cross-sectional nature of the dataset also limits causal analysis, emphasising the need for longitudinal research. Moreover, the case studies, while diverse, are not exhaustive and may overrepresent successful initiatives due to self-selection bias. Finally, limited interviews per case and shifting policy and market conditions further constrain generalisability, highlighting the need for ongoing, context-aware research.

As a result, TANDEM paves the way for future research. Future research could deepen understanding of key dynamics in energy community development, including the unexpected negative effects of non-pecuniary support and EU low-carbon funding on social inclusiveness, which call for causal investigation through longitudinal analysis. Repeating and expanding the TANDEM survey every one to two years would enable time-series data collection, supporting more robust policy evaluation and tracking the evolving nature of energy communities. Additional areas for exploration include the growth potential of energy communities by 2030–2050, focusing on metrics like installed capacity, citizen involvement, job creation, capital mobilisation, and fossil fuel displacement. Comparative studies of national policy frameworks and local practices would clarify regulatory and institutional influences, while ethnographic and participatory methods could illuminate the lived experiences and agency of community members, particularly for marginalised groups, offering a richer understanding of inclusion, governance, and internal dynamics.



Policy recommendations

7 Policy recommendations

TANDEM has demonstrated the essential role that energy communities can play in delivering a just, inclusive, and citizen-driven energy transition across Europe. However, our research revealed gaps in terms of social inclusiveness, territorial equity, and institutional support. As elaborated in Chapter 2-3, the research shows that the emergence and inclusiveness of energy communities depends on a combination of enabling conditions (such as financial support, institutional strength, social trust, and renewable infrastructure) as well as deliberate efforts to align governance and funding with social objectives. With the right support, energy communities can become resilient, community-driven models that balance social inclusiveness, participation, and market realities.

The 10 policy recommendations presented are informed by these findings and focus on four main topics: facilitating social inclusiveness in energy communities, favourable actions and spatial settings that enable the uptake of energy communities, the role of integrated approaches in territorial developments as well as how to improve national data collection on energy communities, both to aid regulatory oversight and to gather further information on their activities, social benefits, growth overtime, and the actors engaging in them.



Social inclusiveness (as defined in Chapter 1 is the share of disadvantaged households in the energy community compared to the wider region), is a growing priority among emerging energy communities. While 40% of surveyed energy communities acknowledged that they had a specific policy targeting vulnerable groups, the analysis above highlights that:

- Social inclusiveness is driven primarily by financial support (e.g. subsidies, loans), regional income levels, and dedicated energy poverty policies.
- Non-financial support, while present, does not have a positive impact, possibly due to implementation gaps rather than inherent ineffectiveness.
- Formal inclusion mechanisms and strong public partnerships seem to enable deeper integration of vulnerable groups, while informal outreach strategies remain helpful but insufficient on their own.

In that light, TANDEM proposes the following recommendations on how to facilitate social inclusiveness in energy communities. Given the conceptual overlaps between disadvantaged households, vulnerable groups, and energy poverty, which are often difficult to disentangle, the following measures may address them in combination.

Informational support could be provided to different local actors relevant to the development of energy communities.

Within the enabling framework that every Member State is required to set up according to the Renewable Energy Directive, informational tools could be established and implemented primarily at the local level to ensure accessibility and relevance. These tools could target different actors that work on energy poverty and/or energy communities, with a particular focus on disadvantaged households, SMEs, social economy actors, and civil society organisations. Such tools could take the form of:

- **One Stop Shop (OSS)** at regional, local or even district level – OSSs can serve as a focal point, bringing different information sources and actors together under one roof, to facilitate participation in energy communities but also the creation of new energy communities. Given their proximity to citizens, such tool could help energy communities to be more visible and accessible to a larger audience, including disadvantaged households and vulnerable groups. Given the findings of the study regarding the positive relations between external financial support and the capacity of communities to better engage with a diverse audience, the OSS could also provide information on different national (e.g., feed-in tariffs) and EU funding (e.g., Social Climate Fund) opportunities. A single point of contact for EU funds for energy communities can also be foreseen in the “National and Regional Partnership Plans” proposed as part of the next Multiannual Financial Framework (2028-2034). National secondary structures of energy communities (e.g., coalitions or federations) can

help co-manage the One Stop Shops, providing targeted technical assistance and capacity building programs.¹⁴

- Targeted **guidance and capacity building** for citizens, new and existing energy communities, civil society groups and municipalities on the benefits of and the strategies for developing dedicated inclusion plans for disadvantaged households (information, trainings, events).
- **Local training and outreach activities** specifically designed to inform and empower disadvantaged groups and vulnerable groups, ensuring they are aware of opportunities and equipped to participate meaningfully in energy community initiatives.

Policy incentives could be developed to encourage and support the delivery of social objectives of energy communities, such as social inclusiveness.

Targeted incentives could be developed and delivered via stronger collaboration with regional and local authorities to encourage energy communities to integrate social inclusion into their objectives. Such incentives could take the form of financial, technical, administrative and legal support. Some examples are provided below:

- Introduction of social criteria related to the inclusion of disadvantaged households, as well as governance criteria related to citizen-led control of renewable energy projects in **public procurement procedures** (e.g., concessions for access to publicly controlled spaces). Preferential access could be given to project developers that integrate equity-focused inclusion plans targeting disadvantaged households.
- Dedicated **support schemes** or use of **public funds**, including EU funds (e.g. creation of an 'Inclusive Energy Community Public Fund', or use of the Social Climate Fund), at national level targeted at energy communities, where access to and amount of funding is tied to measurable criteria around social inclusiveness, such as the number of disadvantaged households, vulnerable households or efforts targeting energy poverty. However, a key challenge is that energy communities typically lack access to individual-level data on social exclusion criteria, such as household income. To address this, collaboration with social assistance offices could be explored. These offices may be able to provide aggregated data (such as the percentage of households receiving social assistance at the district level) which could serve as a proxy for identifying low-income areas. This data could then be used to allocate funding more effectively to energy communities operating in districts with higher levels of socio-economic vulnerability. Such funds could also be devoted to support energy communities, and local authorities in particular, to increase the diversity within their membership, for example by reducing and/or covering the costs for vulnerable and energy poor households to become members. It is important to note, however, that introducing additional criteria and earmarking mechanisms may increase the administrative burden on energy communities, particularly those with limited resources. Therefore, it is essential to strike a balance between ensuring targeted support and maintaining accessibility and feasibility for community-led initiatives.
- **Collaborative partnership frameworks** for energy communities at the regional level, incentivising and supporting formal partnerships between energy communities and relevant stakeholders (e.g. local authorities and organisations focused on delivery of social services).
- **Priority grid access** criteria for projects that integrate objectives towards social inclusiveness and delivery of other social objectives. This is key for building the confidence of energy communities' members who have invested time and money in preparing the projects, that their projects will be implemented.
- **Leverage the European semester**, and specifically the country-specific recommendations, as a horizontal coordination tool for the Commission to guide Member States to tackle energy poverty through energy communities.

¹⁴ The idea of establishing an easy-to-access single point of contact for EU funds is in line with the European Parliament's recommendations for the next EU budget <https://www.europarl.europa.eu/news/en/press-room/20250502IPR28212/parliament-s-priorities-for-the-eu-s-post-2027-long-term-budget>. It also aligns with the idea of REScoop.eu's Vision for the next EU budget. <https://www.rescoop.eu/toolbox/fit-for-communities-ensuring-the-next-eu-budget-can-support-citizen-energy-projects-effectively>



Favourable actions and spatial settings that enable deployment of energy communities

The findings from TANDEM highlighted the complex interplay between socioeconomic, geographic, infrastructural, and institutional factors in shaping the emergence of energy communities across regions. Subsidies, financial instruments, and a supportive framework for renewable energy production and related infrastructure, both in urban and rural areas, can support the emergence and development of energy communities. More specifically:

- **Social trust** is the strongest predictor of energy community formation.
- **Household income** is a major driver of energy community presence, as wealthier regions are better positioned to support the upfront investments required for participation.
- **Institutional strength** and political trust shape energy community emergence. However, these factors vary across regions, underscoring the need for place-based policy approaches rather than one-size-fits-all solutions.
- **Financial viability** remains a core challenge for the emergence and development of energy communities. They require tailored, context-specific funding instruments, ranging from early-stage grants to stable long-term revenue models. Where market pressures grow, transparent governance and alignment with value-based partners help balance their financial and social goals.

Nevertheless, there are also particular socio-political, economic and/or institutional obstacles that energy communities face in establishing themselves in different territorial settings, such as Eastern EU regions, or tailoring their activities to promote social inclusiveness (e.g. lack of access to finance, supportive institutional/legal framework for energy communities, access to expertise or tools).

To address these obstacles and increase the presence of energy communities in regions where they are least present, TANDEM recommends focusing the below proposed actions, particularly in Eastern Europe where the lowest number of energy communities is observed:

Knowledge-sharing and promotional activities to be launched.

Such activities could be launched in less developed regions to inform the general public and the local governments on the benefit of community-owned RES projects. This could for example involve the upscale of available tools at regional level to facilitate information-sharing and matchmaking between communities and other local stakeholders, such as companies and local governments, with space available to installations.

Co-ownership/co-development models between commercial RES developers and energy communities/citizens.

Such models could be promoted for larger projects. This can be done via targets set at regional/local level, as well as the development of targeted incentives.

The launch of a “Tech-Support Program”.

Such a program could boost the digital and technological capacity of less developed regions for energy community formation in combination with the development of step-by-step guides and trainings with expert facilitators to ensure the available tools and knowledge can be used by citizens and municipalities independently.

Expand and simplify access to subsidies and financial instruments for energy communities.

This requires the expansion and simplification of processes to access financial support while ensuring they are tailored to the unique needs of community-driven, socially inclusive energy projects (this could be done as suggested in the recommendation on incentives for increasing social inclusiveness presented above). The Commission could acknowledge Community Energy Financing Schemes (“CEFS”) created through the LIFE ACCE project, as revolving funds that can crowd significant amounts of private capital.



Role of integrated approaches in territorial development

TANDEM demonstrates that there are factors that influence the potential to develop energy communities both in more urbanised (population dense) and rural areas, depending on context, including spatial and regulatory constraints, and prioritisation of public funds for regional development of energy communities. More specifically territorial embeddedness and infrastructure further enable energy community growth. Regions with a high density of renewable infrastructure and integration into local development frameworks (e.g., LEADER, LAGs) show greater energy community success. However, territorial strategies must prioritise inclusion explicitly to avoid reinforcing inequalities.

To support territorial inclusive approaches that allow all EU citizens (regardless of residing in urban or rural areas) to participate in an energy community, TANDEM proposes:

Ensure that policies and incentives around the development of energy communities allow for initiatives that can cover a regional approach.

This includes definitions around energy communities at the national level that allow for a territorial approach to renewable energy development and participation of citizens, local authorities and SMEs as well as a flexible and context-specific approach to the requirement of geographical proximity of energy communities that retain local ownership.

Member States can also better support energy communities in their European funding programmes for regional development such as the ERDF, Cohesion and Regional Development Funds, and the Community Led Local Development/LEADER approach. Such tools could be adapted according to a multi-level governance approach, with involvement of regional and local authorities, existing national federations and/or coalitions of energy communities to help design the right calls, and ensure they are disseminated more broadly.

Include energy communities in mapping and planning around the development of renewable energy production technologies (heat, gas and electricity) at the local and regional levels.

Regarding use of the network, network operators, both at the distribution and transmission level, could coordinate to provide transparency (e.g. online access) around (i) available grid hosting capacities, (ii) applications procedures including timeline and costs, and (iii) maps showing RES potential and available space for installations provided at local and regional level (with the potential to match available space with communities who could use it).



Registration and monitoring of energy communities at national level

To collect data on energy communities across different Member States, TANDEM relied on a number of mapping initiatives that, depending on the Member State, included National Agencies, the Energy Regulator or another public body, System Operators, and non-governmental organisations. When verifying the data from these national databases, we found that national monitoring systems for energy communities are still emerging and use divergent methodologies for collecting data on energy communities. Furthermore, most national monitoring systems for energy communities do not have quality assurance or concrete criteria to track data on the number of energy communities.

A number of factors impact the ability to collect comparable data and information from energy communities across many countries. This includes:

- The lack of a sufficiently concrete **legal definition** of REC or CEC adopted in all Member States;
- The lack of a dedicated responsibility at the national level to an appropriate **oversight body** (e.g. regulator, agency, etc); and
- Insufficient resources to develop a robust and regularised **quality checks** whether data provided by energy communities complies with the EU definitions.

Given the emerging nature of data and information collection on energy communities at the national level, there is a need to integrate learnings from existing initiatives to improve the tracking of this information. To aid the further collection and refinement of concrete and accurate data on energy communities, and to track the activities, socio-economic objectives and delivery of member and societal benefits, TANDEM recommends:

Responsibility could be assigned at the national level to a body to register, monitor and oversee energy communities.

Otherwise, funds could be provided to a non-governmental organisation to undertake this responsibility. This could be supported on the EU level (e.g. ACER) through the development of a harmonised methodology for national authorities to develop their own system to oversee energy communities at national level and to ensure compliance with the national definition. Minimal amount of information could be collected, such as number/types of energy communities, their activities and objectives, investment, number of members. Sharing and updating of data (e.g. on an annual basis) can also be linked to receiving public subsidies by energy communities.

Ensure registration procedures for energy communities are clear, transparent and simple.

In particular, for initiatives that have already been established as a legal form (e.g. association, cooperative, NGO) that would qualify as an energy community. The Registering authority can also provide guidance to energy communities on how to register an energy community. Legal forms can also be promoted that are likely to have socio-economic objectives rather than a primary objective to pass on profits to shareholders.

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