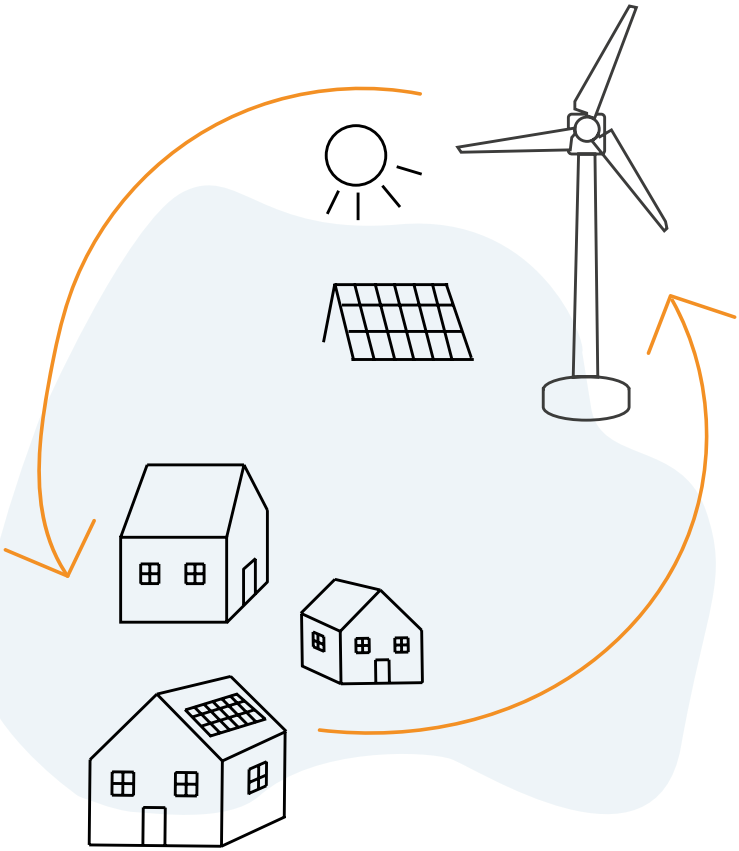
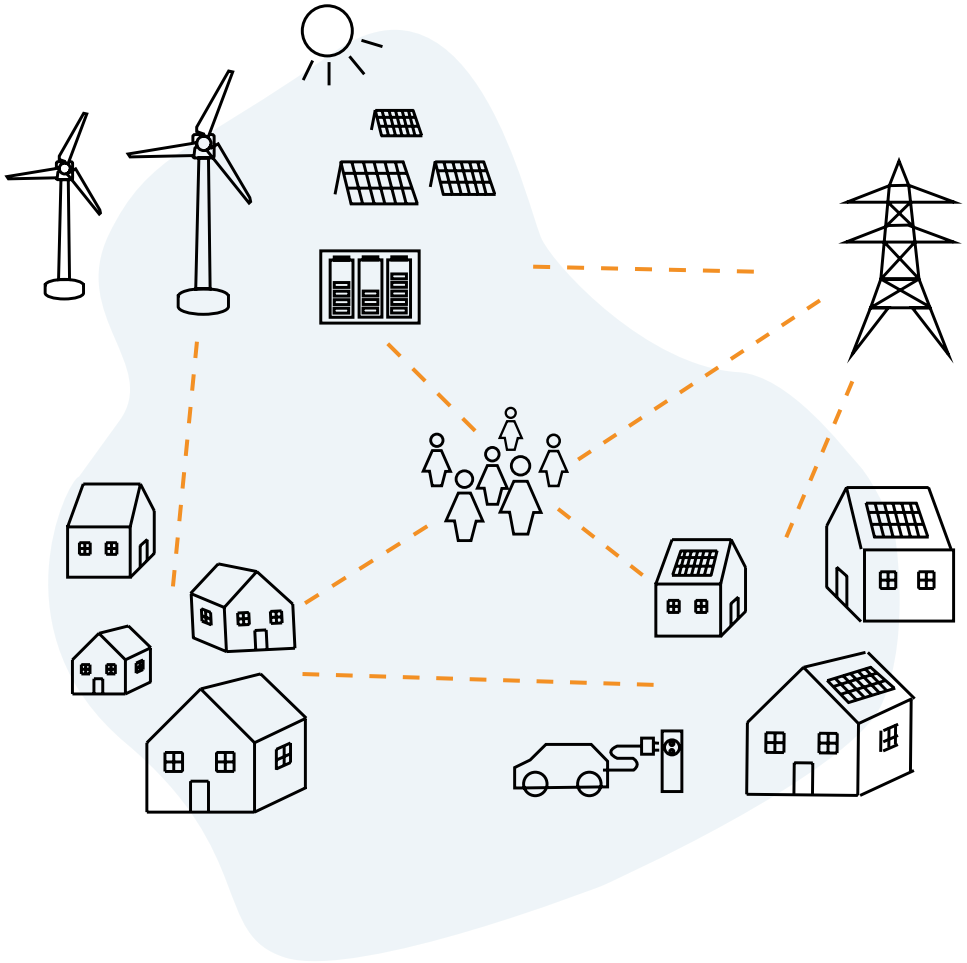
EMPOWERING RENEWABLE AND CITIZEN ENERGY COMMUNITIES

Lessons Learned from Six European Countries





THE STATE OF ENERGY COMMUNITIES IN EUROPE

Introduction – Purpose of this Handbook

At European level, the legal framework for Energy Communities (ECs) is primarily defined by the Renewable Energy Directive (RED II) and Electricity Market Directive (EMD III), which have been implemented differently across Member States. As a result, the conditions for establishing and operating Energy Communities vary widely: in some countries, supportive frameworks are already in place, while in others significant barriers remain.

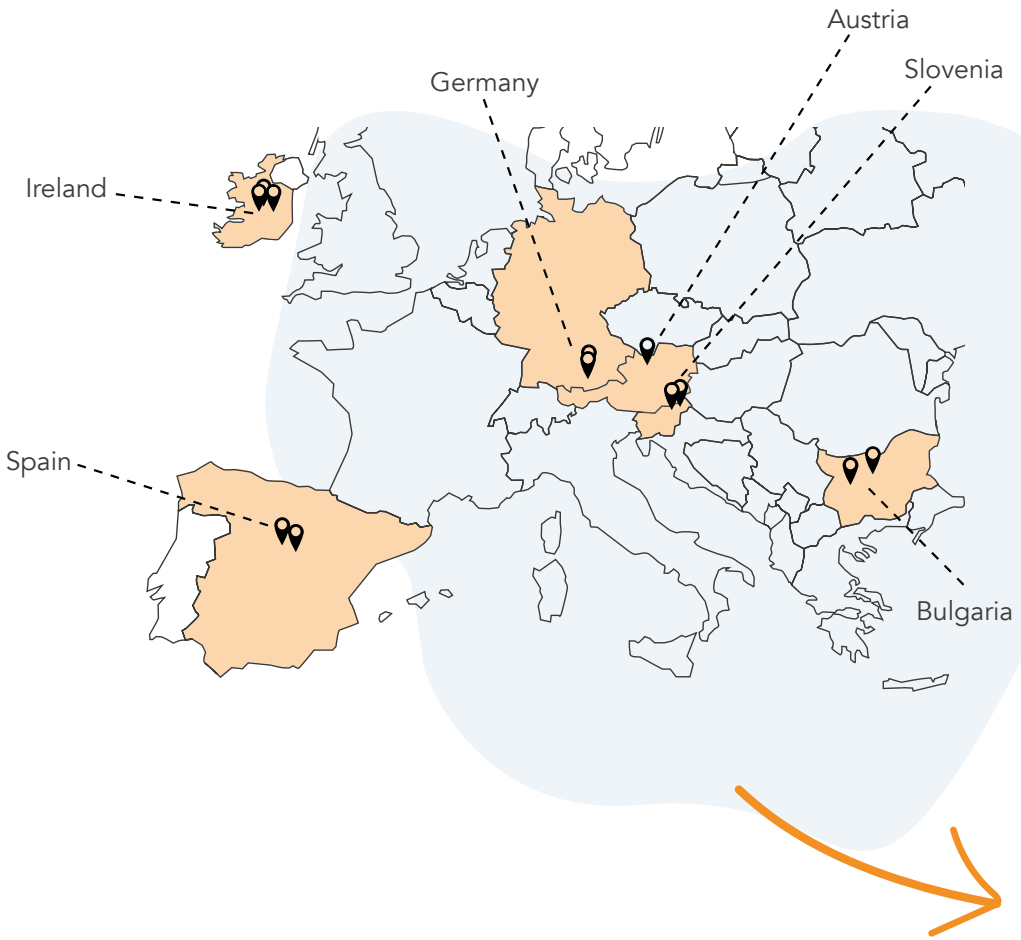
Across all partner countries, however, pioneering Energy Communities have emerged.

Discover how different local actors across Europe have found their own pathways to turn shared ideas into working Energy Communities. These pilot projects show that there is no single model for success–but many promising ways forward.

Drawing on three years of practical experience from six European countries, this handbook brings together tested approaches, shared insights and concrete lessons learned from the EU funded LIFE project POWER-E-COM. It serves as a practical guide for actors who want to successfully establish Energy Communities and learn from proven approaches across Europe.

COUNTRY PROFILES

The following Country Profiles provide an overview of the current status and national framework conditions for Energy Communities in each partner country – Austria, Bulgaria, Germany, Ireland, Slovenia and Spain. Based on this context, the subsequent Lessons Learned present key cross-cutting insights derived from practical experience across all regions.



COUNTRY PROFILE: AUSTRIA

Context and Framework for Energy Communities

OVERVIEW

In Austria, the legal and practical requirements for the implementation of energy communities are in place and there are very high interest and motivation within the regional population to establish and join ECs.

However, there are some challenges to be overcome, given that establishing ECs is a very complex matter.

Presently, four main types of energy communities are possible:

- Local RECs which are served by the same low-voltage substation.
- Regional RECs, served by the same mid-voltage substation
- CECs, where no proximity requirement is given, they can even cover the concession area of several DSOs.
- "GEAs" for the joint PV production and use of several consumers in one building Presently there are about 2,000 energy communities („GEAs" and RECs) in operation in Upper Austria.

National Legal Framework

In Austria, the national implementation of the EU directives concerning energy communities (ECs) – the Renewable Energy Directive (RED) und Electricity Market Directive (EMD) – is completed and the regulatory framework for the establishment of renewable energy communities (RECs) and citizens energy communities (CECs) is in place. This was done step by step starting already in 2021, the next legal implementation concerned the citizens energy communities which are legally possible across DSOs since October 2023. The practical requirements for implementation of CECs are in place since April 2024.

In December 2025 a next step in enabling different schemes of energy sharing implementation was taken with the new "Elektrizitätswirtschaftsgesetz – ElWG" (electricity legislation) which will enter into force by October 2026.

POWER-E-COM Focus:

Project activities in Upper Austria focus on the integration of battery storage systems and on networking of existing ECs, thereby learning from their experiences and how they can be passed on to new ECs.

Explore Further:

With over 1,000 ECs and 30,000 members, Upper Austria leads Europe in citizen-led energy. Watch the video here and discover how ECs receive hands-on support through consulting, training and funding advice here.

Explore the National Training Pack, which offers tailored learning materials and practical guidance for setting up and operating Energy Communities in Austria.

COUNTRY PROFILE: BULGARIA

Context and Framework for Energy Communities

OVERVIEW

In Bulgaria, energy communities (EC) are an emerging concept, with development driven mainly by municipal initiatives responding to rising energy costs, use of public buildings, and local decarbonisation goals. In the absence of a fully operational framework for energy sharing, most initiatives focus on joint renewable electricity generation, mainly solar PV. Despite the 2023 transposition of RED II into the Bulgarian Renewable Energy Source Act, legal and regulatory barriers still constrain the development of EC models based on local entrepreneurship, social inclusion, active citizen participation, and flexibility services.

National Legal Framework

- Regulated retail electricity tariffs are a major barrier to citizen participation, as they reduce economic incentives to consume EC-generated power. Citizens who become EC consumers lose their eligibility, and any electricity not supplied by the community must be purchased from an energy trader at market-based prices, which are considerably higher.
- National funding for ECs is limited, most support comes from EU mechanisms, which provide grants and technical assistance for planning and capacity building.

- Technology eligibility rules limit ECs to urban-based generation facilities such as solar PV, while excluding wind, small hydropower, and biomass – often more suitable for rural areas and municipality-led initiatives.
- Community-shared local district heating systems are treated like conventional district heating operators, subjecting ECs to licensing and regulatory obligations designed for large-scale utilities. Furthermore, district heating prices are regulated, preventing ECs from setting internal pricing or benefit-sharing arrangements.

POWER-E-COM Focus: Municipality-led RES electricity and heating communities

Municipality-led ECs deliver solar PV electricity and renewable or hybrid heating solutions, with municipalities playing a key role in overcoming administrative, financial and social barriers.

Explore Further:

The Gabrovo Energy Community pioneers community-led solar energy production in Bulgaria. Learn more here.

A 150 kWp PV system on a municipal building in Gabrovo shows how local ECs work in practice. Watch the video here.

Explore the National Training Pack, with guidance on setting up and running ECs in Bulgaria, and explore and assess the possibility of various EC models.

COUNTRY PROFILE: GERMANY

Context and Framework for Energy Communities

OVERVIEW

Due to the absence of a RED II-compliant framework for (electrical) energy sharing in Germany, most initiatives currently focus on joint electricity generation and the operation of renewable energy installations, or – like in the Oberland region – on community-based heating solutions. These represent the most practical approach to citizen-led energy action under current regulations.

National Legal Framework

- Electricity sharing: Until recently, there was no legal basis for energy sharing via the public grid. With the introduction of § 42c in the Energiewirtschaftsgesetz (EnWG), coming into force in June 2026, energy sharing will be legally established for the first time.
- The Solar Package I (2024) introduced collective building supply, allowing shared use of PV electricity within a single building.
- Heat sector: The Municipal Heat Planning Act (WPG, 2023) obliges municipalities to develop local heat plans and represents an important opportunity for citizen-driven district heating networks and the expansion of local community-based energy systems.

POWER-E-COM Focus: Village heating systems

In the Oberland region, projects are primarily biomass-based, but the integration of heat pumps is also increasingly important, while solar thermal systems and waste heat recovery are promising complementary options. These initiatives are typically supported by municipalities.

Best practice:

Discover inspiring best practice projects developed within the POWER-E-COM project showcasing how communities are realising community-based energy solutions:

In Schwabsoien and Schwabbruck, citizens built a biomass-powered district heating network supplying climate-friendly heat to both villages. Learn more here.

In Fischbachau, the municipality, local installers and citizens are building a community-based heating network. Watch the video here.

Explore the National Training Pack, which offers tailored learning materials and practical guidance for setting up and operating Energy Communities in Germany.

COUNTRY PROFILE: IRELAND

Context and Framework for Energy Communities

OVERVIEW

Ireland has set ambitious climate targets, including a 51% reduction in emissions and 80% renewable electricity by 2030. Currently, renewable sources account for approximately 41% of electricity generation, while ongoing challenges with fossil fuel dependency remain. To support the transition, Ireland has established several national programmes and support mechanisms that facilitate the development of community-led energy initiatives.

National Legal Framework

- RESS Programme: The Renewable Electricity Support Scheme includes dedicated community preference categories and requires a €2 per MWh contribution to a Community Benefit Fund, providing a financial basis for local energy communities.
- SEC Programme: The Sustainable Energy Communities network supports over 900 communities across Ireland, offering mentorship and 100% funded Energy Master Plans to help communities plan and implement their energy transition.
- Community Enabling Framework: A one-stop facility providing technical, legal, and financial support to energy communities, lowering barriers to entry for citizen-led initiatives.

POWER-E-COM Focus: Community Solar and Distributed Energy

Most projects focus on ground-mounted solar PV (4–5 MW) on brownfield sites, structured as CLGs or co-operatives and marketed via SRESS and PPAs. One pilot takes a demand-side approach, combining building retrofits, rooftop PV and EV charging, financed through SEAI grants and community credit union loans.

Explore Further

A best practice example of a successful community-owned energy project in Ireland is the Templederry Windfarm – the country's first community-owned wind farm. Learn more about its development, challenges and achievements here.

Explore the National Training Pack, which offers tailored learning materials and practical guidance for setting up and operating Energy Communities in Ireland.

COUNTRY PROFILE: SLOVENIA

Context and Framework for Energy Communities

OVERVIEW

Slovenia has a strong cooperative tradition and a fast-growing use of renewable energy, especially solar PV. Energy communities are an important tool for meeting climate and energy goals, improving local self-sufficiency and enabling citizens, municipalities and small businesses to take part in the energy transition. Main areas include renewable electricity, collective self-consumption and renewable-based district heating.

National Legal Framework

- Energy communities: Slovenia has transposed RED II and the Electricity Market Directive into national law. Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs) are legally recognised and may generate, consume, store and sell energy and provide related services.
- Energy sharing: National law allows collective self-consumption and energy sharing among members, including via the public grid. Rules for metering, allocation and billing are set by the Energy Agency and applied by system operators.
- Market access: Energy communities can access electricity markets, sell surplus energy and participate in support schemes under the same conditions as other actors.

- Self-consumption: Collective self-consumption from renewables is permitted in apartment buildings, public facilities and consumer groups, offering a key entry point for energy communities.
- Heat sector: The framework supports renewable and efficient district heating, biomass, heat pumps and waste heat, enabling community heating systems.

POWER-E-COM Focus: Renewable electricity and community heating

In Slovenia, energy communities mainly focus on solar electricity with collective self-consumption and energy sharing, and on renewable community heating. These models reduce grid load, increase local use of renewables and strengthen citizen involvement.

Explore Further:

Through POWER-E-COM's cross-border mentoring programme, Slovenian partners gained hands-on guidance from experienced mentors on EC governance, DSO collaboration and citizen engagement.

Learn how Slovenian DSO Elektro Maribor is supporting ECs and enabling decentralised energy solutions here.

Explore the National Training Pack, which offers tailored learning materials and practical guidance for setting up and operating ECs in Slovenia.

COUNTRY PROFILE: SPAIN

Context and Framework for Energy Communities

OVERVIEW

Spain has taken steps toward enabling Energy Communities enabling community participation in renewable energy and the small consumers develop projects based on collective self-consumption as the practical mechanism for citizen-led projects. A complete RED II–aligned regulatory framework for energy sharing remains under development - the more comprehensive regulation required for Citizen Energy Communities (CECs) remains pending - limiting the full potential of energy communities for now.

National Legal Framework

- Electricity sharing: Most energy communities in Spain still operate mainly through collective self-consumption, as it remains the most practical legal path for sharing renewable electricity. This model – established under Royal Decree 244/2019–allows several users to draw power from a shared installation and benefits from favourable conditions such as no grid charges on self-consumed renewable energy. This is possible if the PV is in the roof of a building, industrial land or in pergola (2,000m maximum distance to the consumers) or for other locations (500m maximum distance).
- The recent amendment to the regulatory framework introduced by Royal Decree-Law 7/2026 includes, as key provisions, the extension of the maximum distance for collective self-consumption from 2 km to 5 km, the classification of installations of up to 5 MW as generation facilities associated with nearby consumers via the grid (previously 0.5 MW), and the introduction of the role of Self-Consumption Manager as the unique representative of the energy community (or collective self-consumption) in dealings with the distributor.

POWER-E-COM Focus: Solar PV on Roofs and Cooperation with Local Authorities

In Spain, projects are primarily PV-based, with creation of associations (sometimes companies or cooperatives) as the legal form for the energy community and with strong support and cooperation by local and province public authorities.

Explore Further:

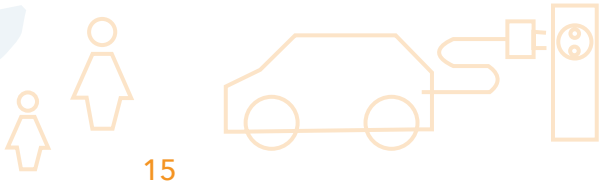
Discover best practice examples from across the country:

In Villarrobledo, local actors are establishing ECs for rural development and climate action. Learn more here.

Montilla Renovable is a citizen-led EC in Córdoba, developing its first 75 kW rooftop solar installation. Read the full story here.

In Rivas near Madrid, residents are building a solar-powered ECs with shared energy models. Learn more here and here.

Explore the national implementation roadmap, which provides an analysis of ECs and their framework conditions in Spain. You can also access the National Training Pack, offering tailored learning materials and guidance on ECs in Spain.



LESSONS LEARNED

for New Renewable Energy Communities

Energy Communities (ECs) enable citizen participation, local value creation, and progress in the energy transition. At the same time, they face legal, technical, organisational, and social challenges – especially in early phases. The following lessons learned are based on practical experience from different regions and are intended to support actors who plan, implement, and operate new Energy Communities.

1. Clarify the Framework Early

A clear understanding of the national and regional legal framework is essential before launching an EC. Unclear transposition of EU legislation, administrative complexity, or regulatory gaps can cause significant delays.
Early analysis of the legal, institutional, and market environment helps identify risks, clarify responsibilities, and set realistic expectations. Many later challenges can only be effectively addressed if this groundwork is done at the beginning.

2. Strengthen Local Support Structures

Local contact points, advisory services, and intermediary organisations are crucial for new ECs. They build trust, provide guidance, and connect initiatives with municipalities, grid operators, and other stakeholders.
To be effective in the long term, these structures need stable resources, institutional anchoring, and continuous upskilling. Practical, up-to-date advisory services significantly improve implementation success.

3. Involve Key Stakeholders Early

Early and structured stakeholder engagement is a decisive success factor. For electricity-based ECs, early cooperation with Distribution System Operators (DSOs) is essential to address grid access, data exchange, metering, and technical feasibility. For community-based district heating networks, early involvement of heat or fuel suppliers, network operators, planners, installers, and permitting authorities is equally critical. Securing anchor loads (large, reliable consumers) at an early stage is key for economic viability and access to financing.

4. Build Capacity, Learn from Practice, and Enable Replication

ECs benefit strongly from targeted capacity building and structured learning from experience. Training formats are most effective when they are practical, tailored to specific groups (citizens, municipalities, initiatives), and based on real-life examples rather than generic information.

Mentoring by experienced ECs or support organisations accelerates learning, builds confidence, and helps avoid common mistakes – especially during planning and the first years of operation. Peer-to-peer exchange shortens learning curves and makes operational challenges more manageable.
To achieve long-term impact, learning and exchange should be institutionalised through formats such as peer-learning workshops, mentoring schemes, or study visits. This transforms individual experiences into shared knowledge and supports replication and scaling beyond the initial project context. Flexibility remains essential, as regulatory and framework conditions may evolve over time.

5. Balance Social Goals and Economic Viability

ECs bring together diverse motivations, ranging from economic benefits to social participation and local value creation. Successful initiatives balance these perspectives through transparent governance and clear decision-making structures.

There is no universal business model. Models must be adapted to local conditions, legal frameworks, and community expectations to ensure long-term sustainability.

6. Anticipate Implementation Complexity

Implementing an EC is a complex, multi-dimensional process involving legal, technical, organisational, and financial aspects.

Complexity is particularly high for district heating networks due to route planning, construction works, permitting procedures, and coordination with other infrastructure projects. Long investment cycles and high upfront costs make reliable feasibility studies and conservative cost assumptions essential. Funding schemes can improve viability but often affect project timelines due to lengthy application procedures.
Clear rules are especially important for innovative elements such as sector coupling and electricity storage.

7. Communicate Continuously and Strategically

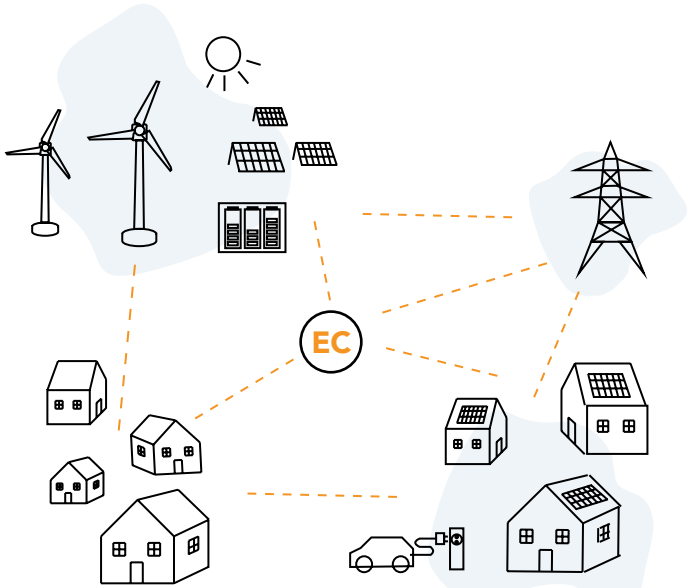
Communication is not a one-off activity but a continuous process throughout the lifecycle of an Energy Community. Clear and transparent communication builds trust, explains benefits, and motivates participation.

Effective strategies combine personal contact, local events, workshops, online formats, and social media. Visible and interactive formats are particularly important in early phases.

KEY TAKEAWAYS

Energy Communities are most successful when they:

- Clarify legal and institutional frameworks early.
- Build strong local support and stakeholder cooperation.
- Invest in people and practical learning.
- Adapt business models to local social and economic realities.
- Communicate continuously to build trust and secure long-term participation.



DO`S & DON`TS

Do`s	Don`ts
Clarify the legal framework early.	Assume that legal, administrative or market conditions are clear or uniform.
Build stable local support structures and involve municipalities from the start.	Postpone stakeholder engagement until key decisions are already fixed.
Engage system-relevant actors early: e. g. permitting authorities, DSOs (electricity projects), heat suppliers, planners (district heating projects).	Treat system operators as purely technical actors (electricity projects).
Secure anchor loads as early as possible (district heating projects).	Underestimate planning, permitting and implementation complexity.
Use practical training and mentoring formats, learn from existing ECs.	Apply generic business models without adapting them to local conditions.
Adapt business models to local conditions.	Focus on technology while neglecting governance, organisation and communication.
Plan conservatively for timelines, costs and feasibility from the beginning.	
Communicate continuously and transparently.	

CONTACTS

WIP Renewable Energies
Sylvensteinstr. 2, 81369 München
wip@wip-munich.de

power-e-com.eu

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