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Ref. Ares(2026)1035749 - 29/01/2026

WESHARE

**D4.2 Learning toolkit for the peer-learning
programme on energy efficiency literacy and
energy communities' establishing**

Empowering businesses in Europe to
develop energy community models
for a successful energy transition

Project number: 101167685

Date: 29/01/2026

#WESHARE



Overview	
Project Acronym	WESHARE
Project Title	Empowering businesses to develop energy community models for a successful energy transition
Project Coordinator	RIMOND SRL
Project Duration	36 months
Deliverable Title	Learning toolkit for the peer-learning programme on energy efficiency literacy and energy communities' establishing
Deliverable No.	D4.2
Dissemination Level	Public
Work Package	WP4 Building competencies for setting-up of business energy communities
Deliverable Lead	ENA
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Due date	30/01/2026
Submission date	29/01/2026
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1. Introduction / Background

Industrial and business parks — key engines of regional economies — face a dual imperative: reducing energy costs and carbon emissions while strengthening energy resilience and competitiveness. Collaborative approaches such as energy communities, in which multiple entities coordinate energy generation, consumption and, where feasible, storage or shared infrastructure, provide a practical pathway to meet these objectives.

By pooling renewable energy resources and sharing benefits, companies can achieve cost savings, and a stronger collective capacity to respond to energy market dynamics and environmental and social gains. Despite their strong potential, energy communities in industrial and business settings face significant barriers — ranging from regulatory and legal constraints to governance and financing challenges — that slow their development.

Within this context, WP4 focuses on building the competencies required to establish business energy communities. It does so by developing peer-learning content and materials that will feed into the WP5 Capacity Building Programme, enabling businesses to implement energy cooperation models based in trust, transparency around energy security and liability issues, and their ability to make informed decisions.

Deliverable 4.2 is designed to support and inspire promoters and facilitators of Energy Communities in business parks and industrial areas across Europe throughout their development journey. Its core objective is to deliver accessible, practice-oriented guidance to leaders of energy community initiatives, enabling them to structure their launch efforts within a clear and coherent development process.

The Toolkit recognises the complex combination of technical, organisational, legal and engagement-related challenges that characterise collaborative energy schemes in industrial and business contexts. It translates these challenges into concrete recommendations, practical tips (“the WESHARE takeaways”) and replicable strategies that can accelerate project development and improve outcomes.

The Learning Toolkit is a knowledge-based resource built on insights generated during the project and compiled in previous deliverables — D1.1 (Repository of the Existing Framework for Energy Cooperation in the Industrial Sector), D3.1 (Business Mapping), D3.2 (Selection of Business Models), and D4.1 (Comparative Analysis of Current Practices) — as well as on direct experience from the three project pilot sites: Antwerp (Belgium), Getafe (Spain), and Sines (Portugal).

The document is structured according to the different stages of the energy community lifecycle:

Chapter 1 addresses a foundational question: *What is an Industrial Energy Community?* It explains why the topic matters, highlights the role of industry in the energy transition, and outlines the specific characteristics of energy communities in business parks.

Chapter 2 establishes the framework conditions for industrial energy communities, covering the policy and regulatory context, available support tools, and comparative insights from the WESHARE partner countries. It also addresses EU policy instruments that may affect Industrial Energy Communities (IECs), such as the Energy Performance of Building Directive (EPBD) and the EU Emissions Trading System (EU ETS) - Climate Action, identifies key barriers to their implementation, and presents examples of existing business-led energy-sharing models.



Chapter 3 explores the multiple benefits of integrating an IEC — economic, environmental, strategic, operational, social and territorial. It includes an infographic that facilitators can use to communicate these benefits to companies interested in joining an energy community.

Chapter 4 provides a practical, step-by-step implementation guide to support stakeholders in navigating common challenges during the establishment of an energy community. It covers key aspects such as stakeholder engagement, community sizing to ensure long-term participation from companies of different sizes and sectors, governance design, the identification of viable business models and the licensing phase.

By combining practical guidance, recommendations and illustrative examples, the Learning Toolkit is intended to serve as a go-to resource for those promoting energy communities in business and industrial parks, trying to unlock their untapped potential for collaborative energy solutions across Europe.

This deliverable is presented in a **digital format** that allows users to navigate through the different learning modules via the following link:

<https://view.genially.com/697a00f2a8c91cf646d7390e>

The materials are also available on the WESHARE website (Futurium).

An interactive PDF version is available for offline use. Nevertheless, the recommended format is the online navigation mode, which enables users to follow their own pathway through the content and explore topics based on their specific learning needs.



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LEARNING TOOLKIT FOR ESTABLISHING ENERGY COMMUNITIES IN BUSINESS PARKS

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WESHARE

START



About the WESHARE project and this document

WESHARE - Empowering businesses to develop energy community models for a successful energy transition is a LIFE Programme project supporting businesses to create business energy communities - collaborating to share renewables, cut costs, and lead Europe's clean energy transition.

WESHARE is piloting practical models in Antwerp (Belgium), Getafe (Spain) and Sines (Portugal), helping companies collaborate across industrial zones and business parks.

By tackling legal, financial and technical barriers, WESHARE makes energy sharing simple, scalable and replicable for businesses of all sizes.

This Learning Toolkit aims to support and inspire promoters and facilitators of Energy Communities in Business Parks throughout their development journey.

The document provides practical guidance and concrete tips to help structure initiatives, overcome common challenges, and effectively engage potential entities to form new energy communities within industrial and business parks all over Europe.



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**What is an Industrial
EC?**



IEC context



**Benefits of integrating
an Industrial EC**



**Step-by-step
implementation guide**



GLOSSARY

- **AFIR** - Alternative Fuels Infrastructure Regulation
- **BM** - Business Model
- **CAPEX** - Capital Expenditure
- **CCCE** - Covenant of Companies for Climate and Energy
- **CEEAG** - Climate, Energy and Environmental Aid Guidelines
- **CSC** - Collective Self-Consumption
- **CEC** - Citizen Energy Community
- **DSO** - Distribution System Operator
- **EC** - Energy Community
- **ECBM** - Energy Community Business Model
- **EED** - Energy Efficiency Directive
- **EIB** - European Investment Bank
- **EPBD** - Energy Performance of Buildings Directive
- **ESCO** - Energy Service Company
- **ESG** - Environmental, Social and Governance
- **ESR** - Effort Sharing Regulation
- **ETS** - Emissions Trading System
- **EU** - European Union
- **EV** - Electric Vehicles
- **GHG** - Greenhouse Gases
- **ICT** - Information and Communication Technologies
- **IEC** - Industrial Energy Community
- **IEMD** - Internal Electricity Market Directive
- **IoT** - Internet of Things
- **LEM** - Local Energy Market
- **LLC** - Limited Liability Companies
- **NZIA** - Net-Zero Industry Act
- **OPEX** - Operating Expenditure
- **PPA** - Power Purchase Agreement
- **PV** - Photovoltaic
- **REC** - Renewable Energy Community
- **RED** - Renewable Energy Directive
- **ROI** - Return on Investment
- **SME** - Small and medium-sized enterprises
- **TSO** - Transmission System Operator
- **V2G/G2V** - Vehicle-to-Grid / Grid-to-Vehicle
- **VAT** - Value Added Tax



What is an Industrial EC?





What is an Industrial Energy Community?



An Industrial Energy Community (IEC) is a collaborative energy model in which companies located within the same industrial area or business park jointly produce, share, manage and consume renewable energy.

By pooling resources and coordinating energy use, participating businesses can invest collectively in renewable generation assets (such as solar PV), energy storage, and demand-side flexibility solutions.

The renewable energy produced in the scope of the IEC is shared among members, reducing reliance on fossil fuels and exposure to volatile energy prices.

Through this collective approach, IECs enable companies to actively participate in the energy transition while decarbonising industrial activity, lowering energy costs, strengthening energy resilience, and enhancing competitiveness and long-term sustainability.

IECs directly respond to the need for a fundamental transformation of the energy system, recognised by the European Union as essential to achieving climate neutrality by 2050.



Why Energy Communities matter

+INFO

The role of industry

+INFO

Energy Communities in Business Parks: key specificities

+INFO



Why Energy Communities matter



The transition to a climate-neutral energy system requires a fundamental transformation of how energy is produced, distributed and consumed. Beyond technological innovation, this shift depends on **collective action and cooperation between businesses, citizens and public actors**. Energy Communities are a transformative mechanism for restructuring local energy systems.

By enabling stakeholders to jointly produce, share and manage renewable energy through **collective investment and shared governance**, they deliver clear economic, environmental and social benefits. These include improved energy efficiency, cost reductions and risk sharing, greater energy independence, and local value creation and job generation.

Today, even small and medium-sized enterprises (SMEs) can become prosumers, actively producing and consuming renewable energy through participation in Energy Communities.



The role of industry

The **industrial sector** accounts for approximately **25% of final energy consumption in the EU** and remains a critical actor in the energy transition.

While energy efficiency has improved, significant **untapped potential remains**. Recent energy crises have accelerated the need for resilient, affordable and low-carbon energy solutions.

EU initiatives such as the **Clean Industrial Deal** support businesses by improving access to affordable clean energy, expanding financing opportunities, simplifying regulatory frameworks and encouraging collaborative energy models.



Energy Communities in Business Parks: key specificities



Achieving carbon neutrality in business parks requires more than individual action -**cooperation between companies drives scale, efficiency, and innovation.**

Industrial energy communities provide an effective framework for this collaboration, enabling joint investment in renewables and storage, optimisation of energy use, emission reductions across electricity, heat, and mobility, and enhanced competitiveness, reputation and energy independence.

However, Industrial Energy Communities differ significantly from citizen-led models:

- ✓ They are business-driven, focusing on cost reduction, efficiency, self-sufficiency and ROI

- ✓ While governance is contractual and commercial, it relies on democratic participation models.
- ✓ Usually involve fewer, larger partners and bigger projects, while Citizen Energy Communities bring together many smaller participants and smaller-scale installations.
- ✓ Scalability and commercial viability (ROI) guide design
- ✓ Can operate under Collective Self-Consumption (CSC) schemes, Renewable Energy Communities (RECs) or Citizen Energy Communities (CECs) frameworks.

IECs require tailored governance, regulatory treatment and support mechanisms, while still contributing to the clean energy transition.



IEC context





IEC context



Policy and regulatory context

Industrial ECs are no longer experimental. They sit at the intersection of climate policy, industrial competitiveness and local energy resilience. [Read more about enabling conditions...](#)



Support framework

Funding exists, but successful uptake depends on legal clarity, project maturity, and coordination capacity. [Read more on how IECs can be facilitated...](#)





EU strategic drivers

The **European Green Deal and Fit for 55 package** establish a binding pathway to climate neutrality by 2050, with strong emphasis on decentralised energy systems, local cooperation and active participation of SMEs and industrial actors, both as energy users and as drivers of innovation and investment.

Key legislative pillars shaping IRECs:

- **Renewable Energy Directive (RED III)** – legal basis for Renewable Energy Communities and collective self-consumption.
- **Internal Electricity Market Directive (IEMD)** – Citizen Energy Communities and peer-to-peer trading.
- **Energy Efficiency Directive (EED)** – demand reduction and efficiency obligations.
- **EU Emissions Trading System (ETS) and ETS II** – indirect and future direct cost impacts on SMEs.
- **Energy Performance of Buildings Directive (EPBD)** (2024 recast) – solar obligations and minimum energy performance for non-residential buildings.
- **Effort Sharing Regulation (ESR)** - national emissions reduction targets for buildings, transport and small industry, shaping local business operations.
 - **AFIR** – shared EV charging in industrial and commercial zones.



Industrial acceleration

The **Net-Zero Industry Act - NZIA** (2024): supports the EU's Green Deal Industrial Plan by boosting clean-tech manufacturing and industrial competitiveness. Enables collaboration among businesses by simplifying permitting and supporting joint investments.

Strengthens conditions for:

- Joint renewable generation
- Shared storage and infrastructure
- Regional industrial clusters (“Net-Zero Acceleration Valleys”)

The upcoming **Citizens’ Energy Package** (1Q 2026) proposed by the EC is expected to:

- Strengthen local energy collaboration between business
- Simplify energy sharing rules
- Facilitate co-investments in renewable energy, share infrastructure and jointly management of energy flows
- Improve access to local energy markets
- Enable digital platforms for peer-to-peer exchange
- Lower transaction costs and complexity for SMEs energy collaboration



To support business participation in the energy transition, the EU provides financial, regulatory and technical support that help companies decarbonize and collaborate in shared environments such as business parks, industrial zones and regional clusters.

FINANCIAL INSTRUMENTS (EU LEVEL)

Key funding streams relevant for collaborative industrial energy projects:

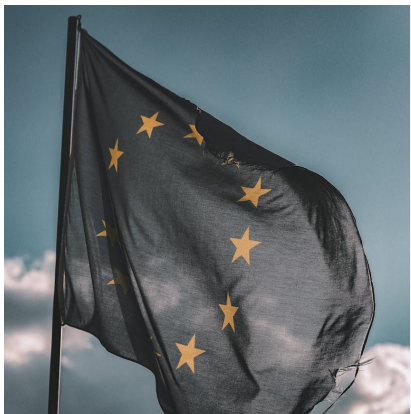
- **Horizon Europe** – pilots, innovation, smart energy systems
- **LIFE Clean Energy Transition** - replication, capacity building
- **Innovation Fund** – large-scale industrial decarbonisation (hydrogen, CCS, heat)
- **InvestEU / EIB / ELENA** – blended finance for renewables and efficiency
- **Just Transition Fund** – support for carbon-intensive regions

REGULATORY AND TECHNICAL ENABLERS

- Legal recognition of RECs and CECs
- State aid compatibility under Climate, Energy and Environmental Aid Guidelines (CEEAG)
- Technical assistance, capacity building and mentoring via:
 1. European Energy Communities Repository
 2. ManagEnergy
 3. Covenant of Companies for Climate and Energy (CCCE)
 4. National Energy Agencies

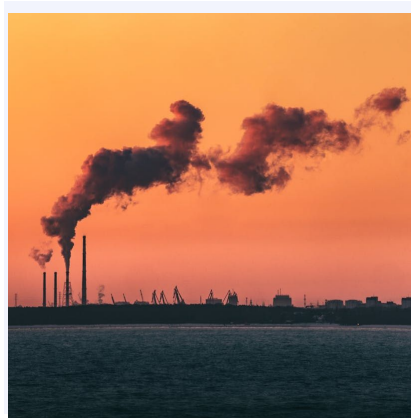


IEC context



National implementation snapshot

IEC models must be adapted to national grid rules, DSO practices and administrative realities. Here you can find some comparative insights between the countries participating in the WESHARE project. [Read more about what differs in practice...](#)



Energy performance and carbon pricing

IECs can mitigate regulatory and cost risks by pooling investment in renewables and efficiency. [Read more on why IECs are impacted by EPBD and ETS.](#)





Summary of the regulatory landscape for energy sharing in Belgium (Flanders), Italy, Portugal and Spain based on the **BRIDGE report** (*)

* BRIDGE Working Group on Regulation. Report on Energy Sharing – Comparative Overview of Implementation in 15 EU Member States. March 2025. European Commission, DG Energy.

Comparative insights (Belgium, Italy, Portugal, Spain)

ASPECT	KEY INSIGHT
Legal transposition	All countries comply formally; operational depth varies
Energy sharing maturity	Spain and Flanders most advanced operationally
Incentives	Italy strongest financial incentives
Administrative simplicity	Portugal and Spain improving, but still uneven
SME accessibility	Complexity and fees remain major barriers

Country-specific highlights: **Belgium (Flanders)**: strong digital infrastructure, high fees | **Italy**: incentive-driven, administratively complex | **Portugal**: flexible legal model, weak operational guidance | **Spain**: one of the most advanced legal bases for energy sharing; administrative complexity.



MORE INFO



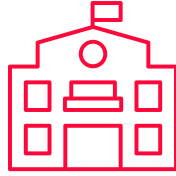
Summary of the regulatory landscape for energy sharing in the countries participating in the WESHARE project

Country	Legal Framework	Participation Rules	DSO Role	Billing & Settlement	Allocation / Coefficients
Belgium (Flanders)	Fully implemented and aligned with relevant EU directives	Open, flexible; geographical perimeter defined by communities; limited to Flemish Region	Fluvius provides platform for registration, measures and allocates shared energy	Retailers bill standard consumption + shared energy; private settlements for direct transactions; 15-min intervals	Standard keys from Fluvius or custom; ex-ante defined
Italy	Developed through multiple regulatory instruments and aligned with EU directives	RECs: within MV/LV substation, ≤1 MW; min 1 prosumer + 1 consumer; no max participants	DSOs ensure grid connection & validate smart meter data; GSE manages incentives & oversight	Retailers bill residual consumption; hourly intervals (moving to 15-min)	Determined internally by community; flexible allocation
Portugal	National transposition of EU RED & IEMD	REC/CSC: proximity to RE installations; flexible geographical boundaries	DSOs oversee compliance & grid integration; smart meters required	Retailers not centrally involved; internal community contracts manage allocation & compensation; 15-min intervals	Allocation left to community agreements; not yet regulated centrally
Spain	National legislation aligned with EU directives; needs further updating.	CSC/RECs. Geographical proximity: 2 km (exceptions up to 20 km/10 MW); smart meters mandatory	DSOs manage data, billing, and sharing; managing entity coordinates participants & DSO	Retailers bill residual consumption & collect grid fees; 15-min intervals (preferably)	Static keys apply for now; regulation is expected to introduce dynamic or hybrid keys, extend CSC limits to 5 km, and clarify the managing entity's role.



The transposition of EU directives on energy sharing has produced varied outcomes in Flanders, Spain, Portugal and Italy. While all four countries have formally embedded energy sharing in national legislation, their level of implementation, operational readiness and market accessibility differ significantly. Although energy sharing is legally recognized in line with EU requirements, key provisions remain inconsistently applied. The ongoing transposition of RED III and IEMD 2024 offers a timely opportunity to harmonize rules and provide greater clarity.





EPBD - Energy Performance of Building Directive

The EPBD drives the EU's 2050 building decarbonization strategy via binding energy performance standards, renovation targets, renewable integration, and smart technology deployment.

Its transposition into national legislation turns EU goals into concrete local obligations.

SMEs, especially in non-residential buildings, face direct impacts:

- Must comply with energy standards and undertake renovations.
- Expected to invest in solar PV, electric mobility, and energy-efficient technologies.

Challenges:

- Many SMEs operate in older, poorly insulated buildings, rely on fossil fuels, and have non-EV fleets.
- Compliance is complex and costly, and inconsistent frameworks reduce certainty and limit proactive engagement..



ETS - Emissions Trading System

The EU ETS is the EU's main tool to reduce greenhouse gas emissions, traditionally targeting large industrial emitters.

Current coverage: Only large installations (>20 MW) in energy-intensive sectors; very few SMEs are directly regulated.

Indirect impacts on SMEs: Rising carbon costs, higher supplier prices, and pressure from partners to improve emissions transparency.

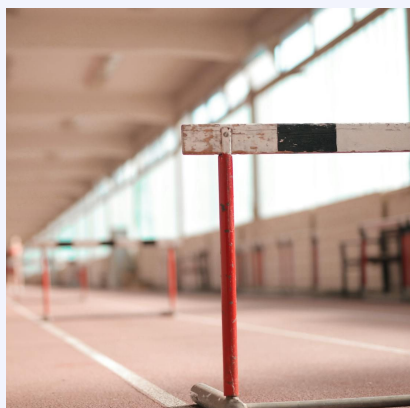
ETS II (from 2027): Expands carbon pricing to fuels for road transport and building heating.

- Costs will be passed to SMEs using diesel machinery, vehicles, or gas heating/production.
- SMEs in older or poorly insulated buildings may face disproportionate cost increases.

Implication: Urgent need for energy efficiency upgrades and fuel switching to manage future ETS-related costs.

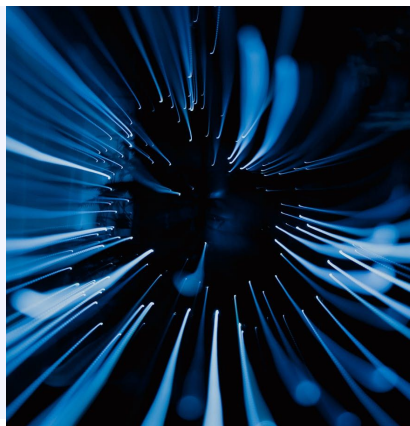


IEC context



Barriers to IECs

The main obstacles for the establishment and implementation of Industrial Energy Communities are not technical, but organisational, financial, and regulatory. [Read more about what's hindering uptake.](#)



Existing Business-led energy sharing models

At business level, energy sharing practices are emerging in response to rising energy costs, decarbonization goals, and the evolving regulatory landscape in the EU. [Read more to know what already works...](#)





Inventory of existing barriers

Integrating an Industrial Energy Community is one of the most effective ways for business parks to advance towards carbon neutrality. Enabled by EU legislation, energy communities provide a cooperative framework that allows companies to jointly invest in, manage and share renewable energy assets.



Regulatory uncertainty and fragmentation

+INFO



Structural limitations of local distribution grids

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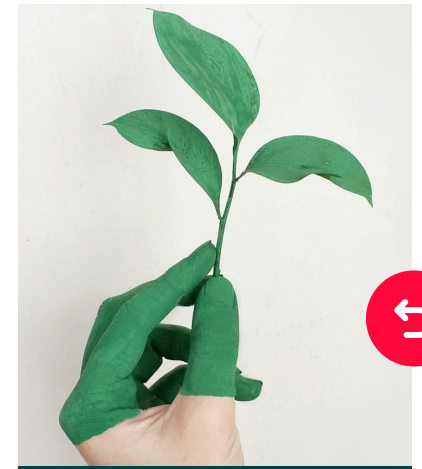
Administrative and operational complexity

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Financial barriers

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Awareness and coordination challenges

+INFO





Regulatory uncertainty and fragmentation

The **lack of harmonization between concepts** as REC - Renewable Energy Community / CEC - Citizen Energy Community / CSC - Collective Self-Consumption in the Member States, combined with **varied interpretations of geographical proximity, grid access, and administrative rules**, creates fragmentation and legal uncertainty for companies, hindering a wider adoption of local energy sharing models.

To date, these frameworks were largely designed for residential users and citizen energy communities, leaving business clusters outside their scope. A **clear, accessible framework that simplifies participation** and provides targeted **support aligned with business-specific organizational and spatial realities** is needed.



Structural limitations of local distribution grids

Local distribution grids face significant structural limits that hinder renewable integration and growing electrification. Many business parks rely on low- and medium-voltage networks built for one-way power flows, making it difficult to support multiple energy-producers.

Limited real-time consumption and generation data, along with fragmented infrastructure ownership, further complicate CSC, energy sharing and shared storage solutions. **Grid investments has not kept pace with massive renewable deployment,** leaving outdated networks increasingly unable to absorb new capacity. In some areas, grid saturation even blocks new connections, underscoring the urgent need for modernization and expansion.



Awareness and coordination challenges

Awareness and coordination challenges limit uptake. Many companies are simply unaware that energy sharing is possible, and few have access to neutral facilitators to guide them through legal, technical, and organizational steps. **Trust and cooperation are critical, particularly in business parks,** where SMEs usually operate independently.

Energy agencies, business associations or active support from local authorities can help create the governance and trust needed to coordinate energy sharing initiatives. Beyond economic and environmental benefits, industrial energy communities could also foster social inclusion by engaging schools, non-profits, and other local stakeholders, but this potential remains largely untapped.



Financial barriers

Financial barriers are significant. **Transitioning to carbon neutrality requires substantial investments** in efficiency, renewable generation, and electrification of processes and fleets, which often exceed companies' financial capacity.

Public subsidies and incentives help only partially, while banks frequently perceive these projects as **high-risk, limiting access to financing**. In addition, shared electricity may be subject to full grid fees, taxes, and administrative charges, reducing economic benefits and discouraging participation.



Administrative and operational complexity

Administrative and operational complexity further hinders participation. **Companies must engage with multiple stakeholders** -including DSOs, regulators, municipalities, and energy suppliers- **without centralized guidance**. Setting up legal entities, governance structures, and sharing agreements often **requires external expertise**, while standard legal templates and digital tools for energy tracking, billing, and member management are largely absent. Business parks with active associations have a comparative advantage, but many SMEs operate independently and lack coordination mechanisms.



Business-led energy sharing models



Collective Self-Consumption in Business Parks

+INFO

REC or CEC in Business Parks

+INFO

Microgrids in industrial clusters

+INFO

Virtual Power Purchase Agreements among multiple business

+INFO

Peer-to-peer trading

+INFO





COLLECTIVE SELF-CONSUMPTION (CSC)

In this model, multiple businesses located within close **geographical proximity** (typically within the same low-voltage distribution network) collectively **consume electricity generated from a shared renewable energy installation** — most commonly solar PV, but sometimes also small-scale wind or biomass. This is often referred to as “collective self-consumption” or “virtual energy sharing”.

One or several businesses install a renewable energy system (e.g., rooftop solar panels on a warehouse or production hall). **The generated electricity is either consumed on-site or virtually allocated to other** nearby businesses through smart metering and a predefined sharing agreement.

Sharing is usually managed by the Distribution System Operator (DSO) or a licensed energy services company that ensures correct allocation and balancing. No physical private cables are required; the **energy sharing is “virtual”**, relying on grid infrastructure and supported by regulation and consequently also implies distribution costs.

This practice is in use where the **CSC is supported by national legislation and it is not required to create a legal entity**. Most of the initiatives are under development, awaiting budget or in the tendering process.

Real cases:

-  Sant Lluís (Spain)
-  ACEPAR (Spain)



REC OR CEC IN BUSINESS PARKS

Companies located in business parks can create - depending on the national regulatory framework- a Citizen Energy Community (CEC) or a Renewable Energy Community (REC) to jointly invest in renewable energy installations and share the generated output, or to share the output of the privately owned renewable energy installation operated by one the community members. In both cases, **a legal entity must be established.**

While multiple initiatives exist across EU Member States, many are not yet operational or are not fully aligned with the CEC or REC frameworks.

Real cases:

-  HIW, in Antwerp (Belgium)
-  Manresa Il-lumina (Spain)



MICROGRIDS IN INDUSTRIAL CLUSTERS

A microgrid is a local energy system that **can operate autonomously or in coordination with the main grid**. In the context of industrial clusters, a group of companies — often located in a business park, port, or industrial zone — connect to a private microgrid. This microgrid integrates shared renewable energy generation, battery storage, and increasingly also EV charging stations.

The participating companies collectively manage and optimize energy production and consumption within the cluster, balancing peaks, reducing grid dependency, and improving energy resilience.

This model requires ownership of the microgrid and is not considered as an energy community according to the EU definitions.

This practice is in use in different member states where this ownership is promoted.

Real case: Ongoing microgrid of Port of Sines (Portugal).



VIRTUAL POWER PURCHASE AGREEMENT (VPPA) AMONG MULTIPLE BUSINESS

A Virtual Power Purchase Agreement (VPPA) is a **financial contract between an energy buyer** (a business or group of businesses) **and a renewable energy generator** (like a solar or wind farm).

Unlike traditional PPAs, in VPPAs there is no physical delivery of electricity to the buyer. Instead, the buyer receives the guarantees of origin (GOs) or renewable energy certificates (RECs) and locks in a fixed price, while the actual electricity is sold by the generator into the market.

Increasingly, groups of companies with similar sustainability goals or purchasing profiles are joining forces to sign aggregate VPPAs, thereby sharing risk and accessing better terms than they would alone.

Real case: retail and logistic companies like IKEA, Heineken or Tech firms and data centres like Google and Amazon.



PEER-TO-PEER TRADING

Peer-to-peer (P2P) energy trading allows businesses (and sometimes households) to buy and sell electricity directly from each other, bypassing traditional utility models.

Transactions are facilitated by DSO platforms or digital platforms. Businesses with surplus renewable energy (typically from solar panels or small wind turbines) can sell this surplus directly to a neighboring business or even consumer within the same grid zone.

Real cases: Powerpeers and Vandebron, in The Netherlands, as mini market trading, and KBC in Flanders, buying directly from 100 employees also known as a many to one form of P2P trading.



Powerpeers



Vandebron



Benefits of integrating an Industrial EC





Benefits of integrating an IEC

Integrating an Industrial Energy Community (IEC) is one of the most effective ways for business parks to advance towards carbon neutrality. Enabled by EU legislation, energy communities provide a cooperative framework that allows companies to move from isolated sustainability actions to high-impact collective strategies, combining economic efficiency, accelerated decarbonisation, energy resilience and territorial value creation.



Download
infographic

ECONOMIC BENEFITS



Joint renewable energy production and collective self-consumption enable:

- **Reduced energy bills**, through shared solar and wind self-consumption and long-term joint Power Purchase Agreements (PPAs).
- **Reduced energy transaction costs** by aligning the energy purchase price with the remuneration received for renewable energy production.
- **Lower exposure to external providers and market volatility**, by securing more stable renewable electricity prices.
- **Economies of scale**, in investment in infrastructure (PV, wind, batteries), contract negotiation and energy services procurement.
- **Lower entry barriers**, particularly for SMESs, through shared investment and improved use of available space (rooftops, car parks and underutilised land).
- **New revenue streams**, including the sale of surplus energy, flexibility services and participation in local energy markets.





Benefits of integrating an IEC

ENVIRONMENTAL BENEFITS



Collective action delivers significantly greater environmental impact:

- **Reduction of greenhouse gas (GHG) emissions**, by replacing fossil-based grid electricity with locally produced and jointly contracted renewable energy.
- **Higher renewable self-consumption rates**, supported by battery storage and smart energy management systems.
- **Decarbonisation of heat**, through low-carbon heat networks based on waste heat, geothermal, solar thermal or aquathermal sources.
- **Exchange of heat and cold produced by RE within the IEC**, highly relevant for efficiency and emissions reduction in the industrial sector.
- **Improved overall energy efficiency**, resulting from coordinated energy audits, demand management and peak-load reduction.
- **Direct contribution to ESG and Net Zero targets**, with measurable, reportable and policy-aligned emissions reductions.





Benefits of integrating an IEC

STRATEGIC AND OPERATIONAL BENEFITS



Participation in a EC strengthens energy resilience and long-term planning:

- **Decentralised energy production** via distributed assets such as solar PV, wind, battery storage and local microgrids.
- **Increased energy independence and security**, reducing reliance on the public electricity grid and contributing to more resilient business parks.
- **Coordinated electrification planning** for heating and cooling (heat pumps and electric boilers), industrial processes and electric vehicle charging for logistics fleets and employee mobility.
- **Coordinated grid management**, including joint grid reinforcement with the Distribution System Operator (DSO) or collective investment in local microgrids where grid capacity is constrained.
- **Enhanced corporate and territorial reputation**, positioning business parks as leaders in sustainability, governance and innovation.
- **Improved access to finance and incentives**, through joint applications to national and European funding programmes.





Benefits of integrating an IEC

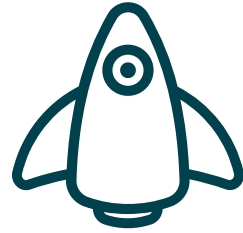
SOCIAL AND TERRITORIAL BENEFITS



The community-based nature of ECs generates wider societal value:

- **Stronger local cooperation and community building**, fostering shared responsibility for the energy transition while increasing energy literacy and technical capacity of companies to support future energy decisions.
- **Development of industrial energy ecosystems**, enabling synergies between companies (e.g. thermal cascading and shared infrastructure).
- **Potential sharing of benefits** with the local area, involving municipalities, local organisations and neighbouring communities.
- **Contribution to a just and inclusive energy transition**, aligned with regional development objectives.
- **Collaborative governance structures**, such as cooperatives or business-park energy boards, enabling: a shared carbon-neutral roadmap with common targets / transparent and inclusive decision-making / coordinated engagement with public authorities and key stakeholders.



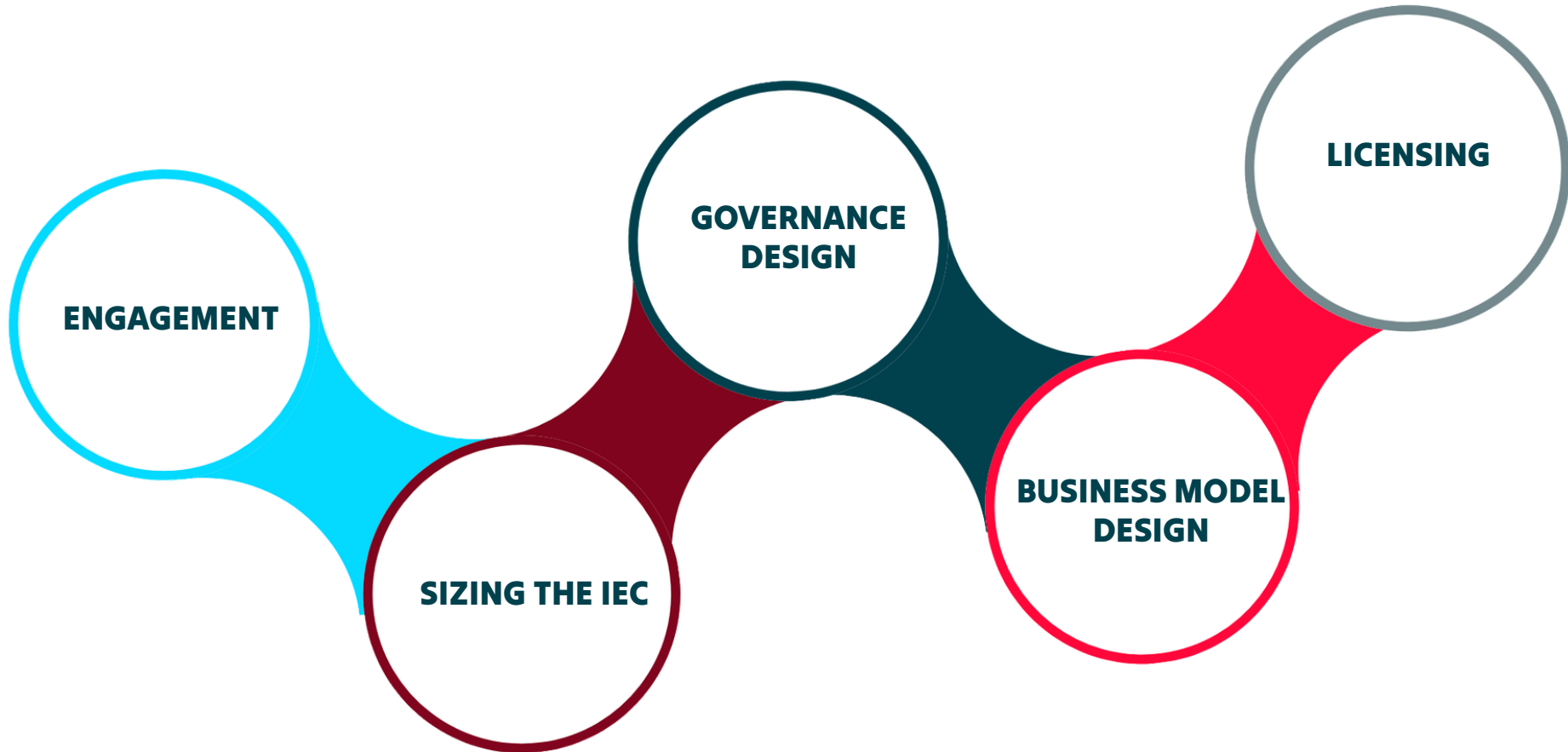


Step-by-step implementation guide





Step-by-step implementation guide





ENGAGEMENT



THE WESHARE
TAKEAWAY

An effective engagement of potential members lays the foundation for a successful Industrial Energy Community.

Key considerations:

- **Identification and outreach to companies with geographical proximity**, particularly those located within the same industrial park or business area, where shared energy solutions can generate scale and cost efficiencies. Existing relationships between companies and potential competitive conflicts may be considered.
- **Presentation of the concept to the business community**, preferably supported by a coordinating body such as a business association, industrial park manager, or similar intermediary, highlighting economic, operational, and sustainability benefits.
- **Building trust and transparency** through clear communication to company decision-makers on objectives, value proposition, expected benefits and investments implications, governance models, and potential risks.
- **Formal expression of interest** by participating companies, establishing an initial commitment to the process.
- **Early involvement of key stakeholders**, including municipalities, the Distribution System Operator (DSO), and specialised facilitators, to ensure alignment with local strategies, regulatory frameworks, and technical feasibility.

“Engagement should create a shared vision, reduce uncertainty and foster collaboration from the outset.”
WESHARE Team





THE WESHARE TAKEAWAY

Engagement

Before establishing an Energy Community, the Flemish WESHARE partners POM and ZUIDTRANT follow a structured, step-by-step engagement strategy for business parks, starting with a **focus on individual company energy efficiency**.

Each business is assessed through a site visit using a standardized template that examines activities, buildings, energy generators, meters and existing renewable energy installations. A detailed report is produced with **recommendations to reduce energy consumption and explore potential for additional renewable energy and energy sharing solutions**.

The strategy also emphasizes the use of renewable energy and electrification. Companies are supported in maximizing self-consumption, controlling energy use, and adopting electric vehicles, heat pumps, and other electrified processes.

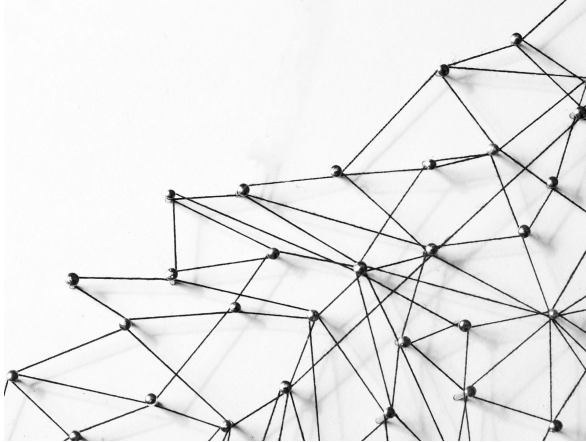
Energy storage solutions, such as batteries or hydrogen, are considered, and energy-sharing mechanisms—like peer-to-peer trading, direct lines, or heat loops—are explored once internal efficiencies are optimized.

These steps serve as the foundation for developing the Energy Community, involving an analysis of the electrical network, evaluation of collective investment opportunities and available subsidies and the refinement of business and management models.

The business park is also provided with guidance and awareness-raising support on establishing a non-profit structure, overcoming obstacles, shaping policy initiatives, and ensuring the long-term sustainability of the Energy Community.



SIZING THE IEC



Sizing the IEC is a critical step to assess the balance between energy demand and renewable energy supply, ensuring technical feasibility and maximising local value creation.

Key considerations:

- **Data collection**, including electricity consumption profiles, existing generation assets, available space for renewable installations, grid connection characteristics and production/consumption expansion plans.
- **Energy demand-supply mapping**, based on the collected data, through a consumption and generation matrix that accounts for spatial distances between production and consumption sites, in compliance with country-specific legal requirements.
- **Analysis of energy needs and availability**, aggregated across EC members and assessed at an appropriate time resolution (e.g. 15-minute, hourly), to capture load patterns and flexibility potential.
- **Identification of optimisation opportunities**, including additional renewable generation and energy storage solutions, to partially or fully meet aggregated consumption needs.



**THE WESHARE
TAKEAWAY**

“Robust sizing enables informed investment decisions and underpins the economic and operational performance of the IEC.”

WESHARE Team





THE WESHARE TAKEAWAY

Sizing the IEC

Accurately sizing an Industrial Energy Community is not just a technical exercise—it is the foundation for local value creation. **Careful data collection** is critical: understanding detailed consumption patterns, existing generation assets, spatial layout and potential expansion plans allows for a realistic assessment of the community's energy balance.

Access to this data is often delayed because many firms—especially SMEs—lack the knowledge or resources to retrieve it from their DSO, and because granting third-party access involves slow, cumbersome authorization and confidentiality procedures.

A **crucial element of this process is trust**. Sizing an IEC requires access to sensitive and often confidential information, including electricity consumption profiles, technical constraints and future industrial plans. Ensuring the confidentiality of this data is essential.

In the Sines pilot (Portugal), companies interested in joining the EC signed an Expression of Interest, committing to provide the information needed for proper sizing and planning of the community's energy systems.

In turn, the WESHARE project promoters—aicep Global Parques and ENA—undertake to handle all shared data in strict compliance with confidentiality, anonymisation, and aggregation principles, using it exclusively for purposes related to the WESHARE project and the future REC of Sines. No information is disclosed outside this scope without the company's express consent.

Finally, always look for **optimisation opportunities**. Even small adjustments in generation mix, storage integration, or demand management can substantially increase the proportion of locally sourced renewable energy and enhance economic benefits for the community. Our advice: approach sizing as an iterative process rather than a one-off calculation, learning from each step and **adapting solutions to the evolving needs of IEC members**.



GOVERNANCE DESIGN

Governance design is a critical success factor for an IEC, as it determines how decisions are taken, how benefits are distributed and how trust and long-term commitment among members are ensured.

Key considerations:

- **Participants and representation**

Industrial ECs typically involve a limited number of participants, often with different sizes, sectors, and energy profiles. Governance arrangements should address potential power imbalances, ensure fair representation, and support strategic member composition that enables complementary consumption patterns and long-term stability. While participation remains open and voluntary, admission criteria may be strategically defined to safeguard the community's sustainability.

- **Cooperative principles and value creation**

Despite their industrial focus, IECs are grounded in cooperative principles, combining economic efficiency with environmental and social objectives. Governance structures should reflect these values, promoting transparency, shared responsibility, and alignment beyond pure profit maximisation.

- **Legal and regulatory framework**

The choice of governance and legal form is shaped by national legislation, reflecting varying transpositions of EU directives. While approaches differ across countries, EU-level requirements generally include legal personality, open and voluntary participation, effective member control, and a primary purpose centred on collective benefits (environmental, social or economic) vs. profit.





GOVERNANCE DESIGN

Common legal forms in practice

- **Cooperatives** – Suitable for collaborative industrial settings, particularly among SMEs, offering democratic governance and shared ownership, and more prevalent in countries with a strong cooperative tradition.
- **Limited Liability Companies (LLCs)** – Frequently adopted by industrial communities due to clearer capital structures, risk management, and familiarity for businesses, though national requirements vary significantly.
- **Associations** – Often used in early or non-profit-oriented phases, especially when an existing association acts as an umbrella, with the option to evolve into a more structured legal form as activities expand.



THE WESHARE
TAKEAWAY



To ensure transparent, fair, and efficient functioning, IECs must be governed by duly constituted statutes and, preferably, by an internal regulation designed to establish:

- Operational management rules
- Criteria for energy and benefit sharing
- Conflict resolution procedures
- Allocation and use of any financial surpluses
- Rules for the admission and withdrawal of members
- Technical rules for connection, operation, and maintenance

“A well-designed governance model balances efficiency, fairness, and compliance, providing a stable foundation for long-term collaboration.”

WESHARE Team





THE WESHARE TAKEAWAY

Governance design

The experience of many Energy Communities shows that **the number of participants can vary widely depending on local conditions**. For instance, in Belgium it is often possible to launch an EC with several dozen members from the start, whereas in other countries or contexts, it may be more effective to begin with a smaller, core group. This is influenced not only by national legislation, but also by local coordination capacity, pre-existing associations and community trust. When coordination or engagement challenges arise, a phased growth approach is recommended: start with the most motivated members, consolidate early successes, and gradually expand the community.

A strong EC relies heavily on trust and a shared sense of purpose, which must be actively nurtured.

Leveraging pre-existing organisational structures, such as **local associations or business park networks**, can provide legitimacy, coordination capacity, and a ready-made framework for engagement. Ensuring participatory processes is equally important, so all members feel heard, involved, and empowered to contribute.

Finally, when selecting the legal form of the EC, **consider** not only ease of setup but also **the community's future evolution**. Build on existing structures, relationships and trust, and account for national regulatory frameworks.

Anticipate potential commercial activities and mid-term development plans. Choosing the most suitable legal form should therefore balance short-term practicality with long-term strategic objectives.



BUSINESS MODEL DESIGN

Business Model (BM) design defines how an organization creates, delivers and captures value. In the context of energy communities, particularly industrial ones, business models go beyond traditional economic logic by integrating environmental and social value dimensions. Unlike conventional models that prioritize profit maximization, Energy Community Business Models (ECBM) aim to generate shared value for a diverse range of stakeholders—including SMEs, public entities and prosumers—by aligning energy objectives with community well-being. The uniqueness of ECBMs is reflected in their emphasis on collective ownership, decentralized governance and the co-creation of services.

Here, a comprehensive overview of the ECBM design framework is presented.

Specificities	Canvas dimensions	Archetypes	Implementation choices
+INFO	+INFO	+INFO	+INFO
Economic framework	EU Directives transposition impacts	Roadblocks	Recommendations
+INFO	+INFO	+INFO	+INFO





BUSINESS MODEL DESIGN - ECBM Specificities

Energy Community Business Models exhibit distinctive characteristics that differentiate them from traditional Business Models. Rather than prioritizing profit maximization for a single entity, these models aim to deliver environmental, economic and social benefits to the community. Their collaborative and decentralized nature introduces dynamics such as collective ownership, multisided interactions and reliance on network effects, which requires a tailored approach to Business Model innovation, focused on shared value creation and community-driven objectives. Key aspects:

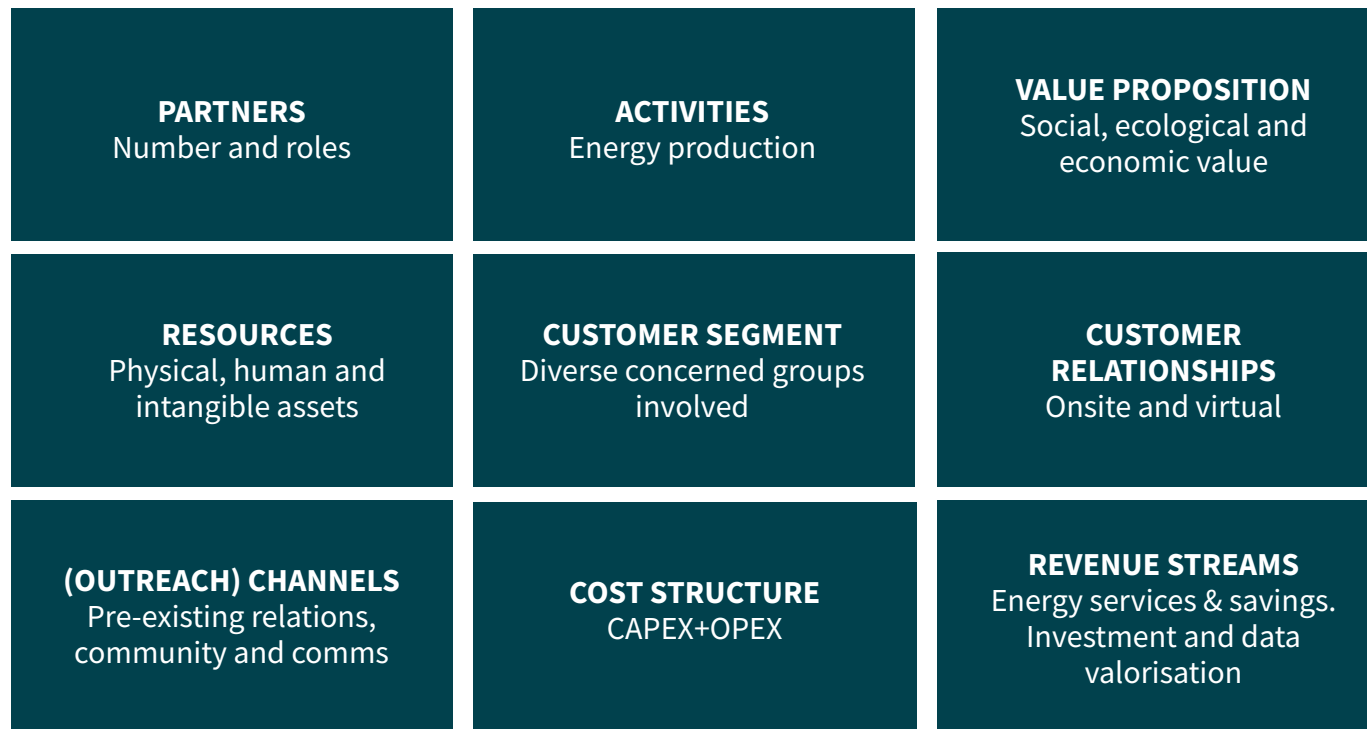
- ✓ **Sustainable Business Models:** ECBMs move beyond traditional frameworks toward sustainable BMs that integrate citizens' diverse roles and create complex value, encompassing economic, social, and environmental dimensions.
- ✓ **Key functions:** ECBMs rely on core functions aligned with Business Model Canvas dimensions, notably channels, customer relationships, key resources, activities, and partnerships.
- ✓ **Outside-in perspective:** Rather than maximizing profit for a single entity, ECs focus on addressing energy challenges and delivering shared benefits to members and society.
- ✓ **Co-creation and co-benefits:** Value is jointly created through collaboration among stakeholders, leveraging synergies between production and consumption and enhancing system-wide effectiveness.
- ✓ **Community-centric governance:** Business model innovation is collectively driven by the community, empowering members as consumers and prosumers and extending value creation beyond energy generation to efficiency and sufficiency. Given the diversity of actors, ensuring that each member perceives a net positive value proposition is essential.
- ✓ **Multisided Platforms:** ECs often operate as multisided platforms, enabling interactions among diverse actors and service providers to maximize shared benefits.
- ✓ **Network Effects:** Both direct and indirect network effects are central to ECBM success, as growing participation and complementary services increase value, resilience, and sustainability.





BUSINESS MODEL DESIGN - Canvas dimension

This section describes the key dimensions of the Energy Community Business Model, outlining —through the nine Canvas blocks—how value is created, delivered, and captured within Industrial Energy Communities.





PARTNERS



Partners are central to Industrial Energy Communities (IECs), as the community's value proposition depends directly on its members. With fewer participants than Citizen Energy Communities, each partner plays a strategic role, while the Energy Community Manager has a more limited influence. Core partners include consumers, prosumers, aggregators and energy suppliers, supported by external stakeholders such as monitoring system providers and blockchain-enabled platforms. The partnership configuration is key for ensuring operational efficiency and shared value creation.

IECs rely on a prosumer-based model complemented by key external actors:

- **Energy suppliers and aggregators** manage electricity supply, financial transactions and energy balancing.
- **Distribution System Operators (DSOs)** ensure grid management, data flows and system reliability.
- **Financial institutions** enable project financing.
- **Energy service providers** deliver technical and operational support.
- **Public authorities and coordination centres** support governance and regulatory alignment.
- **Third parties and other ECs** foster collaboration, scalability and innovation.
- **Local and regional actors** support socio-economic integration.



Partner composition affects governance, implementation speed and innovation capacity. Strong external partnerships—particularly for data management—and close cooperation with DSOs or TSOs are key. Given limited in-house expertise, IECs often require technical assistance and public support in early stages, while dissemination relies on members professional networks and targeted peer-to-peer engagement.





THE WESHARE TAKEAWAY

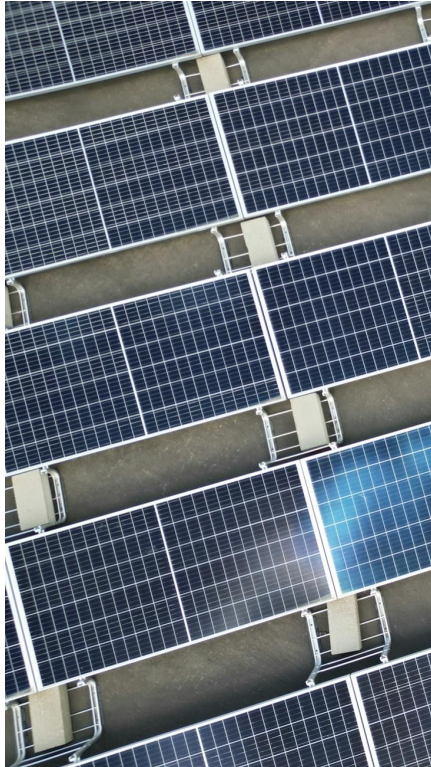
Partners

The early stages of Energy Communities' establishment might be slow and cumbersome, as the legislative frameworks have a diverse level of design and development in different countries and ECs are still a figure in development. Therefore, **counting with public bodies or other professional support is highly advisable**, as well as participating in summits, conferences, trainings and other exchange opportunities.

As a matter of fact, Antwerp's structure enables a multi-stakeholder governance using existing institutional frameworks, while Sines must build partnerships under stricter regulatory boundaries, potentially favouring cooperative or association models with strong private-sector collaboration. The regulation in Spain is still under development and there is a high degree of flexibility in the form ECs choose. Most ECs in Spain remain under associative/cooperative frameworks, as is the case of the pilot in Getafe.



ACTIVITIES



Once participants are defined, the assets to be deployed should be studied in detail to ensure the best fit with existing assets and the consumption profiles of the identified participants.

From an operational standpoint, key activities obviously include **local energy generation and related maintenance operations**, but, since value is derived but the simultaneous production and consumption, the **consumption of energy is also a key value-generating activity**.

Beyond these activities, an Industrial Energy Community can also develop **additional services**, such as **energy efficiency solutions, energy storage, EV charging infrastructure, flexibility grid provision** and, importantly, the aggregation and negotiation of energy demand for **collective purchasing** in the wholesale electricity market, offering businesses within the community a stronger position and potential cost savings.

These activities should be supported by important and challenging activities linked to data management and analysis to support intra-community billing procedures and active community building – an energy community success only when partners trust each other. **Ancillary activities** also contribute to this goal: childcare, catering, lighting, security or any other service can be organized at community level with benefits for the participants.



THE WESHARE
TAKEAWAY





THE WESHARE TAKEAWAY

Activities

Antwerp (Bosduin), Getafe and Sines represent **distinct stages in energy community development**, which directly shape their suitable business models.

In **Antwerp**, most PV assets are already privately owned, with batteries expected in the future. The Energy Community (EC) does not own generation assets, acting instead as a coordinator via the PWRFULL platform and ZuidtrAnt. This setup favours a light, coordination-based model with low upfront investment, focusing on aggregation and optimization rather than asset ownership.

A strong Energy Community relies heavily on trust and a shared sense of purpose, which must be actively nurtured.

In contrast, **Sines** is still forming, with PV and storage assets yet to be installed. Here, the Renewable Energy Community (REC) is expected to own collective assets,

and several CAPEX approaches are being considered, including member ownership, REC ownership, ESCO partnerships, or bank financing. As a result, Sines may require a capital-intensive, asset-based or hybrid ESCO-REC model, where the REC plays a central role in development and management.

The IEC in **Getafe** will be organised around independent projects, not all members will participate in all projects, and only the members benefitting from a project will invest in its setup. However, the EC as a whole will be responsible for maintenance and OPEX costs, to simplify the daily management.

This contrast highlights how existing versus new infrastructure and ownership structures fundamentally influence the choice of business model.



VALUE PROPOSITION



IECs create value by combining economic efficiency, environmental sustainability and social cooperation. Through collective energy generation and consumption, IECs reduce costs, lower emissions and strengthen collaboration among industrial actors. Value depends on effective governance, community design and coordinated energy management.

- **Social Value** - IECs reinforce local industrial networks, fostering cooperation between companies, public bodies and stakeholders. Participatory governance enhances transparency, trust and long-term collaboration, while supporting job creation, skills development and local economic stability. Clear communication and inclusive participation are essential for engagement.
- **Ecological Value** IECs advance industrial decarbonisation by enabling investments in local renewable energy sources, mainly solar PV. Self-consumption, demand-side management and coordinated planning reduce emissions, fossil fuel dependence and improve grid flexibility and resilience.
- **Economic Value** - IECs provide direct financial benefits through lower energy bills, revenues from surplus energy and savings from shared services. Economies of scale, reduced administrative costs and risk-sharing enable larger, long-term renewable investments.



**THE WESHARE
TAKEAWAY**

For business parks, IECs provide: **Cost reduction** through energy sharing and joint investments | **Energy autonomy and resilience** against price volatility and outages | **Operational efficiency** via centralised energy management platforms | **Sustainability and ESG performance** through collective decarbonisation | **New revenue opportunities** from flexibility services and energy markets.





THE WESHARE TAKEAWAY

Value proposition

In the Bosduin business park, companies are exploring energy sharing to reduce electricity costs and enhance energy resilience, leveraging existing assets through centralized management on a digital platform. Technical and organizational support from ZuidtrAnt and POM ensures smooth coordination, while **future services could include aggregated energy purchasing, energy efficiency measures, flexibility services to the DSO, and EV charging and storage.**

In contrast, Sines Industrial and Logistic Zone (ZILS) is developing a scalable industrial Renewable Energy Community (REC) with collective installation of PV, battery storage, and EV infrastructure. This approach aims to **lower energy costs through optimized energy sharing and increase autonomy and resilience** for all member entities.

In Getafe, the main motivation factor contributing to the setup of the EC is **energy independence and reduction of operation costs**. A study has shown that sharing production from preexisting assets will only have a limited impact in the Getafe case, therefore its development will revolve around targeted projects that will work in parallel, to maximize their impact.

All three initiatives demonstrate **the value of collaboration**, though Bosduin focuses on **coordination of existing assets**, while Sines and Getafe emphasize **collective ownership and capital-intensive development** to enable long-term energy control and scalability.



RESOURCES



The success of an Industrial Energy Community (IEC) relies on both **physical infrastructure and intangible capabilities**. Central are the **renewable energy assets**—photovoltaic systems, wind turbines, storage technologies and smart metering— that enable decentralized generation, management and optimization. However, technical resources alone are not sufficient.

Equally critical is **technical and managerial expertise**, including energy system design, data analysis, maintenance, regulatory compliance and the operation of digital platforms for monitoring and coordination. These platforms, supported by IoT devices and advanced data analytics facilitate flexibility services, dynamic pricing and improved forecasting. Blockchain and smart contracts can further enhance transaction traceability and automation, while machine learning can maximise value, underscoring the strategic role of technology in IECs.

Human capital is another essential resource. The skills, commitment, and coordination of stakeholders—including energy managers, planners, and company representatives—ensure that the community can function smoothly and evolve over time. Finally, the **legal and organizational structure** chosen for the community acts as an enabling resource, shaping how decisions are made, how responsibilities are distributed, and how benefits are shared.

Together, these resources provide the technical, institutional, and human foundation necessary for an IEC to be both operationally viable and resilient in the long term.





CUSTOMER SEGMENTS



The customer segments in ECs include diverse groups of individuals and organizations who either contribute to or benefit from the community's operations.

These segments include **prosumers of different typologies (residential, large scale, and others), pure consumers, local energy producers, storage operators, and aggregators**. Additional segments, like platform operators, ESCOs, and network operators, can also be customers in specific configurations.

Members of an IEC often wear multiple hats, acting as asset owners, facilitators, or service providers, depending on their involvement. Customer segments are further specified as prosumers and consumers, with an additional focus on entities like Distribution System Operators (DSOs) and Transmission System Operators (TSOs).





CUSTOMER RELATIONSHIPS



Effective customer relationships are vital to maintaining trust, ensuring participation, and driving the success of IECs.

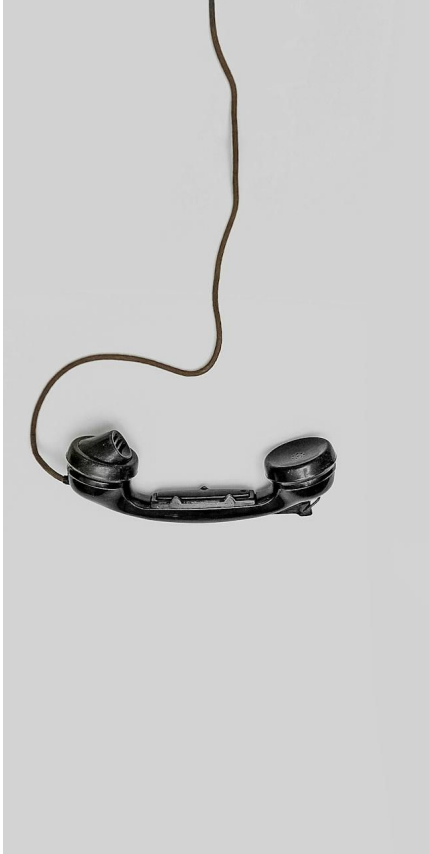
These relationships are facilitated both onsite and virtually through management and monitoring platform (see “channels”).

The most important item in IEC customer relationships is the fostering of a **sense of community and collaboration** – therefore, it is important to ensure that the governance of the EC allows for sufficient inputs from its members and organize activities where the members can meet and bond.





CHANNELS



The most relevant channels for reaching participants are through existing relationships, building on pre-established trust. Acting in tandem with either local governments, energy management agencies and/or existing business park managers is the most effective way to reach potential participants in an energy community. Once a community has been set up, it becomes key to showcase its results and benefits to other companies, thus becoming the main channel for new customer acquisition.

The channels to reach the existing members of the energy community can be any number of the following:

- **Billing** – mostly monthly and either paper based or electronic. The format should be leveraged to include tips on how to maximize the impact of the company's participation in the EC
- **Electronic platform** – ideally, an electronic platform is created to show the various energy flows in the EC, with the most granularity possible. It can be enriched with forecasting tools to add even more value to the participants, showing when to time their consumption to maximize their benefit.
- **Newsletter** – a newsletter at fixed time intervals (e.g. quarterly) that showcases the main realizations of the EC can be circulated to increase the sense of connection within the EC. Where there is an existing newsletter (e.g. in the business park), it makes sense to include the EC as a dedicated section.
- **In-person meetings** – in line with the governance of the EC, in person meetings are favoured when decisions must be taken regarding the operations of the EC.





COST STRUCTURE

The cost structure of an Industrial Energy Community (IEC) reflects the complexity of managing distributed energy assets and collective operations and is divided into CAPEX and OPEX, both shaped by ownership models, governance choices and scale.



- ✓ **CAPEX (capital expenditures)** includes upfront investments in renewable generation, storage, smart metering and digital infrastructure. Key strategic decisions concern asset ownership (collective, individual, or third-party), the scope of investments and financing arrangements. These choices directly affect cost allocation among members, fee structures, and the long-term development of the IREC. Third-party ownership models can reduce initial CAPEX but introduce recurring costs through energy offtake agreements or leasing fees.
- ✓ **OPEX (operating expenditures)** covers the ongoing costs of operating and maintaining the community, including energy management platforms, monitoring systems, asset maintenance, EC management fees, network charges, taxes, and regulatory compliance. Clear rules on how these costs are shared among members are essential for financial stability and transparency.



Financing costs depend on project size, technology, governance, and ownership models. Typical mechanisms include self-financing, bank loans, public and private grants, equity investments, and cooperative funding schemes. Robust financial modelling is required to identify the most suitable mix.

CONTINUE ↓





FINANCING

Energy Community Business Models are still relatively new and innovative, which leads banks and investors to perceive them as a **risk-investment**. This is largely due to their **open and voluntary participation structure and the limited number of mature, successfully implemented ECs** (most are still in early stages). Businesses generally have easier access to financing than citizens; however, funding options for ECs - particularly as independent legal entities- remain limited. **Some activities are easier to finance**, such as initial capital contributions from participating companies for the EC establishment or advances on approved public subsidies, where public involvement provides additional guarantees.

Subsequent development phases, including storage or mobility solutions, are often easier to finance once the energy production and consumption are established, profitable and the EC has shown stability and solvency.

In some cases, **ESCOs** promote the creation of ECs, although this often alters their nature by shifting control and management away from the community. At the same time, private investment funds are increasingly recognising ECs as a viable business model, using installed assets as guarantees of project viability.

In conclusion, **financing goes beyond asset acquisition**: it directly influences an EC's capacity to operate, scale, and deliver value to its members. The choice between low- and high-CAPEX models, together with their associated revenue streams, is therefore critical to long-term economic viability.



COST STRUCTURE

As the IEC also functions as a settlement and value-allocation platform, **additional costs** arise from managing shared energy flows and distributing benefits among members. Well-designed benefit-sharing mechanisms, aligned with investment levels or consumption patterns, are critical to ensuring fairness, trust, and sustained engagement.

Finally, **network and scale effects** play a significant role: while many costs are largely fixed, increasing energy sharing and membership can reduce per-unit costs over time, improve operational efficiency, and strengthen the overall economic performance of the community.



Beyond energy generation and consumption, an IEC may also develop **complementary activities** such as data monitoring and processing, community coordination, knowledge exchange with other energy communities or stakeholders, and shared services within business parks (e.g. mobility, logistics or other collective services). While these activities can strengthen long-term sustainability and value creation, they introduce additional costs that must be strategically assessed and integrated into the business model.



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TAKEAWAY**





THE WESHARE TAKEAWAY

Cost structure

In early stages, it is useful to be as precise as possible concerning future costs and activities of the Energy Community. **Adequate financial planning and turnover estimations** can highlight potential weaknesses, dimension future investments properly and prevent unnecessary delays.

This planning exercise will also influence the governance model, the choice of legal form and the development of activities in phases, using pilots or trial installations. It will also serve as a first indicator of the amount and type of partners needed for a successful start.

Building a **strong and detailed financial plan is indispensable for finding investors and funding**, This is a relatively new business model, and banks and other entities are not always prone to financing enterprises that they consider risky. However, Industrial Energy Communities are in a better position vis a vis banks and financial institutions, as they are more organized and solvent.



REVENUE STREAMS



The revenue streams of Industrial Energy Communities (IRECs) reflect their role as energy service providers, coordination platforms and enablers of the energy transition. Main revenues:

- ✓ **Energy services.** A core revenue stream, derived from the provision of electricity and, where applicable, heating, mobility and energy management services. These services are tailored to members' needs and often combine renewable energy supply with smart management solutions.
- ✓ **Energy cost savings and market-based revenues.** Equally significant, these are achieved through self-consumption, demand response, peak shaving and storage strategies. Aggregated flexibility from distributed assets (e.g. batteries, flexible loads) can be monetised through participation in balancing, capacity or other ancillary service markets, generating additional income while supporting grid stability.
- ✓ **Community investment and member contributions** such as fees, shares or tariffs, provide a stable financial base for operations and investments and reinforce members' sense of ownership and long-term engagement.
- ✓ **Data and asset valorisation** offer emerging opportunities. Production and consumption data can optimise operations or, where legally permitted, be shared in anonymised form with third parties. Additional revenues may arise from leasing or selling technology to members and providing local grid services such as congestion management or balancing.

Overall, diversified revenue streams enable IECs to combine financial viability with collective benefits. While competitive markets limit price premiums, growing value is expected from flexibility services, system optimisation and data-driven solutions as regulatory frameworks mature.

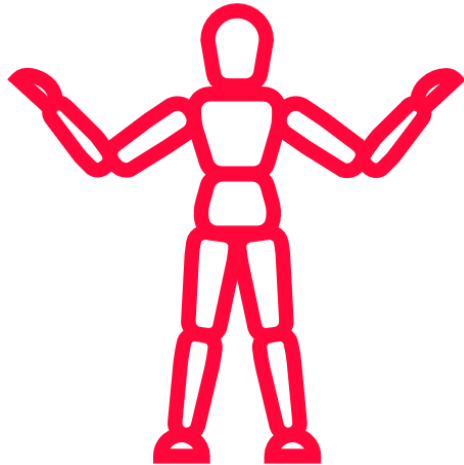




BUSINESS MODEL DESIGN - ECBM Archetypes

The classification of energy community business models (ECBM) has been widely studied, focusing primarily on the degree of user participation in financing and governance. This involvement shapes the ownership structures and engagement levels. These archetypes differ by goals, ownership, and stakeholder roles, and often blend into hybrid forms or overlap on some aspects.

The most comprehensive approach classifies ECBMs into eight archetypes:



- 01** Energy cooperatives
- 02** Community prosumerism
- 03** Local Energy Markets
- 04** Community collective generation

- 05** Third-Party sponsored communities
- 06** Community flexibility aggregation
- 07** Community ESCO
- 08** E-Mobility cooperatives





Energy cooperatives

Citizen-led entities based on voluntary membership and democratic governance, where members pool resources to invest in renewable generation.

Can operate either as for-profit entities or not-for-profit cooperatives. Revenues are reinvested in the community and distributed among members.

Cooperatives often collaborate with municipalities and, in some countries, may manage local distribution networks, acting as Distribution System Operator (DSO).

In Spain, umbrella cooperatives are emerging to integrate multiple EC cooperatives. These structures enable ECs to exchange knowledge, address shared challenges, and collaborate, including to improve access to finance.



Community prosumerism

It involves communities of users who both produce and consume their own renewable energy, selling surplus generation.

By pooling demand and excess energy, these prosumers gain better market conditions, access local energy markets, and benefit from economies of scale.

The model relies on infrastructure to monitor energy and information flows and to align consumption with renewable production, with revenues either shared among members or reinvested in the community through local markets or supplier contracts.



Local Energy Markets (LEMs)

Platforms enabling peer-to-peer (P2P) energy trading within a community to maximize local consumption and reduce grid dependency.

LEMs can operate under centralized or decentralized configurations (local provider, shared community assets, or fully decentralized markets) and rely on advanced ICT to manage transactions.



Community collective generation

Shared generation and storage systems, typically in multi-tenant buildings, where participants jointly invest and benefit from reduced energy bills and surplus revenues. Energy and benefits are allocated according to predefined, collectively agreed rules.

Generally, advanced ICT is required to manage these systems and facilitate energy monitoring, distribution, and revenue sharing.



Third-Party Sponsored Communities

Energy communities supported by external entities (e.g. utilities or technology providers) that finance, own, and manage assets.

Communities benefit from reduced energy prices, while sponsors are remunerated through PPAs or usage fees, retaining most risks and control.



Community flexibility aggregation

Brings together consumers, producers, and prosumers to pool energy volumes and provide demand response and flexibility services to energy markets.

Acting as virtual power plants, aggregators enable even small users to participate by aggregating distributed energy resources, optimising consumption, and trading energy and flexibility on various markets.

Supported by advanced ICT infrastructure and contractual arrangements, these models create value for both users and system operators while offering participants economic benefits such as reduced energy costs.



Community ESCOs

Energy Service Companies that develop and finance renewable and efficiency solutions for communities, remunerated through guaranteed or shared energy savings.

ESCOs typically own and operate assets, offering customized solutions aligned with community needs.

Under this configuration, several variants can be implemented (e.g. solar-as-a-service or heat-as-a-service models).



E-Mobility Cooperatives

Community-based models promoting clean mobility services such as car-sharing or public transport, often integrating EVs as flexible storage resources (V2G/G2V).

These for-profit models link local renewable generation with mobility services but face regulatory challenges.



BUSINESS MODEL DESIGN - Implementation choices

The development of a business model for an Industrial Energy Community (IEC) requires a flexible, context-sensitive approach rather than relying on predefined archetypes. The WESHARE methodology identifies relevant dimensions—such as participant structure, asset ownership, financial arrangements, data governance, and ancillary services—allowing modular, tailored models that reflect the specific industrial context, capacities, and regulatory environment. This comprehensive, modular approach to business model construction allows for robust adaptation to diverse industrial and legal environments, ensuring that each IEC is both resilient and contextually appropriate.

The feasibility of different configurations is influenced by both regulatory and regional factors. National and regional transpositions of EU directives may impose limits on eligible participants, asset ownership, or public-sector involvement, while local operational conditions—such as grid management practices, administrative fees, or data access challenges—can further restrict participation. Successful business model design therefore requires careful consideration of legal, economic, and technical constraints, combined with a clear understanding of the community's strategic objectives and local opportunities.

While energy sharing forms the core of all models, additional value-generating elements can be incorporated to enhance benefits, depending on the needs and preferences of the participants.

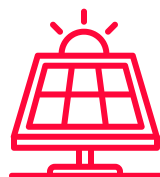


See the graphic of IREC basic model focused solely on energy sharing

Implementation choices:



Participants



Assets



Ownership



Management



Finance

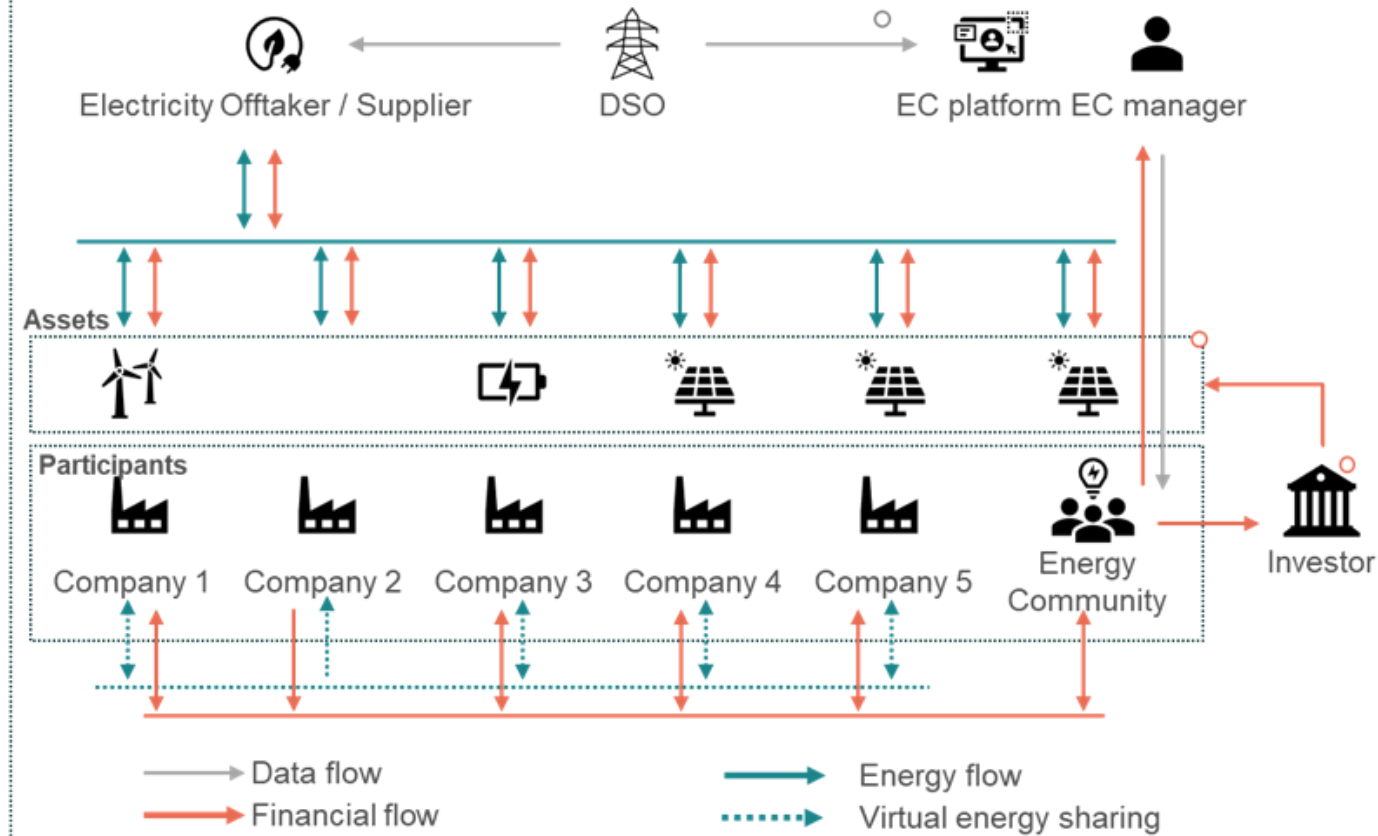


Data



Ancillary services





Example of a basic Energy Community business model. It begins focused solely on energy sharing, which can then be expanded through additional value-adding dimensions.



PARTICIPANTS



The first critical decision concerns participants. The nature and complementarity of consumption and production profiles, as well as pre-existing trust relationships, will influence the formation and functioning of the community.

Industrial communities generally involve fewer actors than citizen ones, which affects dynamics, coordination, and governance.



Assets



Once participants are defined, the assets to be deployed should be studied in detail to ensure the best fit with existing assets and the consumption profiles of the identified participants.

These may include solar generation, battery storage, or even thermal systems like heat exchange networks. Capacity and expected production levels must be carefully assessed in advance.



Ownership



Ownership models can vary widely—from individual to collective to third-party ownership—and will determine how investments and risks are shared.

Similarly, management responsibilities may be taken up by a single member, a pre-existing structure, or an external entity, with different implications for trust and financials.

Management



Deciding who manages the energy community and how this role is remunerated is crucial. Management typically covers operational oversight across commercial, administrative, financial, technical, governance, and legal domains, as well as internal and external communication.

In simple setups, one experienced member may act as manager for a modest fee or indirect benefits; existing structures can also take on the role. Alternatively, a third-party manager offers neutrality and professionalism at higher cost. The right choice depends on trust, capacity, and community scale, and may evolve over time.

Finance



The financial structure must support not only infrastructure investment, but also operational costs.

Financing may come from banks, ESCOs, community shares, or crowdfunding platforms. Importantly, financial planning should cover digital and legal services as well as energy infrastructure.

Data



Data management is central to the operation of any IEC. High-quality data enables accurate simulation, billing, and forecasting, ensuring efficient and reliable community management.

The regional data ecosystem is pivotal: when DSOs provides streamlined access to granular consumption and production data, the setup and ongoing optimization of the community are greatly simplified.

Shared dashboards and open reporting mechanisms further enhance transparency, trust and economic optimization among participants. To support this, a dedicated data management tool or software is highly recommended.



Ancillary services



Mature energy communities can offer ancillary services—such as Energy Efficiency services, EV charging, storage co-investment and community-focused initiatives, like events, childcare, or shared services— that boost value and build trust.

These services sustain engagement during low-benefit periods, foster collaboration and innovation, and attract external investment. Beyond energy, they strengthen internal cohesion and position the community as a driver of regional and industrial development.



BUSINESS MODEL DESIGN - Economic framework

The economic sustainability of an energy community is a decisive factor in its long-term viability. Understanding how value is created, distributed, and monetized within these communities is essential to ensure participation and commitment, particularly in industrial settings where return on investment is critical.

Given its importance in determining financial viability, a detailed examination of the components of an energy invoice is needed:



All the above factors contribute to generate the value for the sum of all participants. How this value is divided among participants depends on the rules adopted by the IEC – and may provide strong differences between participants. A strong and inclusive governance is key to ensure sustained participation by all participants.



Economic impact of energy sharing for participants

The economic benefit of energy sharing within an Industrial Energy Community (IEC) derives from the potential to reduce specific components of the electricity bill for the consumer, or increase the price of the renewable energy produced within the community. However, this advantage varies considerably across national contexts, depending on how shared energy is valued and which cost components can be avoided. The economic advantage of energy sharing is determined by the sum of all these components, multiplied by their relative volumes, and subtracting the fee to the energy community. The financial viability of energy communities across Europe depends not only on internal business model design but also on national regulatory and economic frameworks that determine cost savings, incentives, and administrative conditions.



See the graphic on breakdown of economic advantage of energy sharing



Energy costs (€/kWh)

The costs purely for the remuneration of the energy generation, invoiced according to the amount of energy consumed (kWh, for example).

For consumption, three main pricing structures typically apply:

- **Fixed**: the price is set for a predetermined period.
- **Variable**: the price fluctuates based on a monthly benchmark. This tariff can be further split according to peak and off-peak hours that are pre-set.
- **Dynamic**: the price reflects the instantaneous price (often within a 1-hour timeframe) negotiated on the spot market.

For grid injection, the remuneration obtained by the producer can similarly follow fixed, variable or dynamic structures.

Supplier markup: an important component of the energy cost is the supplier's margin, added by the retail energy supplier on top of the benchmark price. Likewise, the remuneration for electricity that is injected into the grid is going to be remunerated by the energy off-taker at a rate lower than the benchmark price.

Sharing energy within an energy community is more advantageous than grid injection because export remuneration is lower than retail prices. Having complementary consumption profiles within the EC is key to maximising energy sharing.



Transport and distribution costs

Include both volumetric and capacity-based costs associated with the use of the public grid.

These can either be charged on a fixed basis (€), but more often on a percentual basis (%), power basis (€/kW) or on an energy basis (€/kWh).

Some countries have a total or partial exemption of transport and distribution tariffs, reflecting the lesser amount of usage of the grid when self-consuming energy.



Fixed costs

Cover various administrative and contractual charges like:

- o Peak power charge (€/kW)
- o Metering fees/fixed commercial fees (€)
- o Administrative fees (€)

In some cases, suppliers impose additional administrative fees related to data management, effectively penalizing participation in energy communities and potentially making them uneconomical for smaller prosumers. Moreover, grid injection typically requires smart meters, which may entail additional costs. Energy communities themselves also incur costs for data management, customer support, setup, and invoicing, resulting in further fixed and variable costs for participants.



Taxes

Include excise duties and levies to support national energy policies (mostly €/kWh), and VAT (%).

It should be noted that in industrial contexts, VAT is not a real cost, as it is fully recoverable. Therefore, any savings on VAT have no economic impact for industrial participants.

In some countries, no excise duties or VAT are levied on shared energy, in a bid to further incentivize the roll-out of renewable energy.

Individual production and consumption

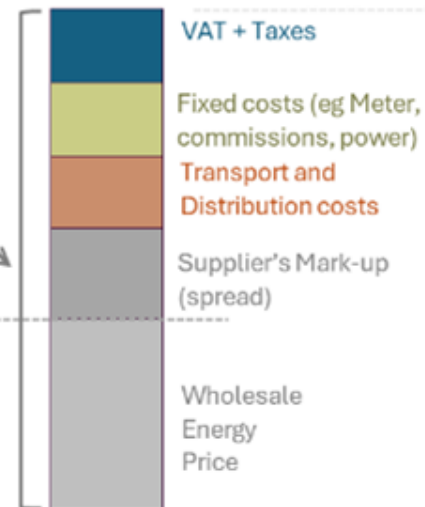


Production



Consumption

Payment for energy



Return on investment

Injection cost
Injection net remuneration

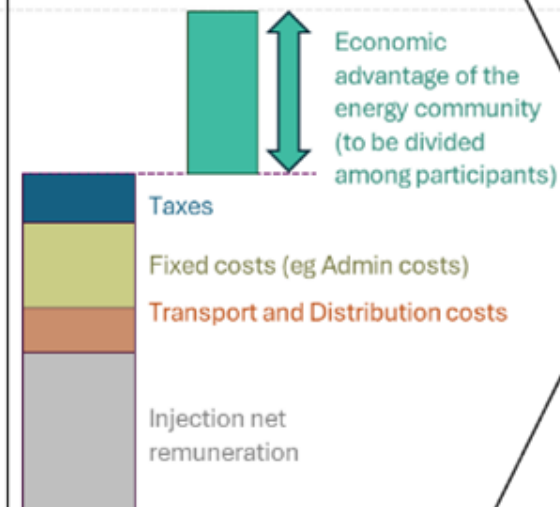
Vs.

Energy Community



Self-consumed energy

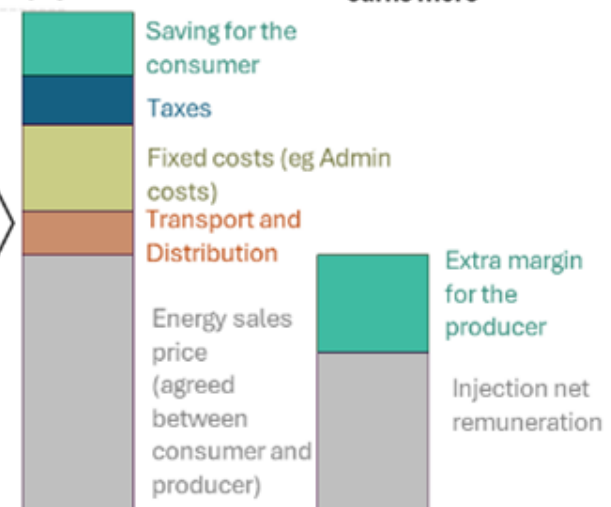
Energy Community as a whole



Consumer pays less

+

Producers earns more



Breakdown of economic advantage of energy sharing





BUSINESS MODEL DESIGN - EU Directives transposition impacts

The way EU directives are transposed into national laws has a **major impact on the growth and functioning of energy communities (ECs)**. Different national approaches create variations that shape business models, influencing rules on participation, eligibility, legal forms, governance, proximity, technologies, and financial viability.

Participation rules and proximity requirements determine community composition, particularly whether large enterprises can join—bigger players can boost shared energy volumes and stability. Flexible proximity rules, especially for virtual communities, improve scalability and engagement.

Conversely, restrictions on installed capacity or technologies, like batteries or wind turbines, limit potential and reduce collective benefits. Greater technological diversity and flexible energy use enhance self-consumption, delivering higher environmental and economic gains.

Economic outcomes also vary. Mechanisms for valuing shared energy, together with costs (grid fees, smart meters, administrative charges) and incentives (feed-in premiums, capital support), directly shape profitability. Savings on electricity bills can differ widely, while supportive incentives strengthen business cases by raising revenues or lowering upfront costs.





BUSINESS MODEL DESIGN - Roadblocks identified for IECs

Beyond strategic choices made by individual Energy Communities (ECs), several systemic challenges hinder their successful development and operation.

Lack of legal certainty

A major barrier is the fragmented and incomplete transposition of EU legislation across Member States. Vague regulatory frameworks create uncertainty during EC setup, particularly regarding grid connection procedures. Divergent rules on geographical proximity, grid access, and administrative procedures further discourage SME participation and limit the scalability of local energy sharing models. Clearer guidance, legal harmonisation, and simplified procedures would significantly support EC deployment.

Role of public sector institutions

As emerging market actors, ECs require technical expertise and coordination, especially in early stages. Local authorities often act as facilitators by providing legitimacy, technical support, public assets (e.g. rooftops), and human resources, benefiting both ECs and municipalities through decarbonisation and energy poverty mitigation. However, in some countries, public procurement rules restrict direct municipal participation in ECs.

Asset ownership complexity

ECs often involve mixed asset ownership structures, combining individually owned installations, collectively owned assets, and shared or decentralised service costs. This complexity complicates governance, financial planning, and external communication. Clear definition and simplification of ownership arrangements are essential for cost allocation, revenue distribution, and engagement with new members or financiers.

CONTINUE ↓





BUSINESS MODEL DESIGN - Roadblocks identified for IRECs

Beyond strategic choices made by individual Energy Communities (ECs), several systemic challenges hinder their successful development and operation.

Financing constraints

Access to finance remains challenging, as financial institutions typically require long-term guarantees. The “open and voluntary” membership principle introduces uncertainty regarding community composition, reducing perceived creditworthiness. As a result, banks often prefer financing individual members rather than ECs as collective entities.

Delayed Return on Investment (ROI)

Although IECs benefit from higher energy volumes and economies of scale compared to Citizen Energy Communities, they remain long-term investments. Legislative and procedural delays—particularly in grid connection—can significantly postpone ROI. In Spain, prolonged grid linkage processes have forced many ECs to operate temporarily as collective self-consumption schemes without surplus generation, limiting economic benefits to cost savings for extended periods.

Limited internal capacity in SMEs

SMEs often lack in-house technical staff, and decisions fall to busy managing directors who tend to deprioritize energy communities, causing delays. Strong guidance from independent experts or trusted partners (e.g. municipalities) is essential.

Grid rigidity

Limited grid adaptability remains a major bottleneck. Delays in coefficient adjustments and grid connections severely affect EC commissioning. While official timelines may indicate short connection periods (e.g. two months in Spain), actual delays can extend to several years, undermining business model viability and investor confidence.



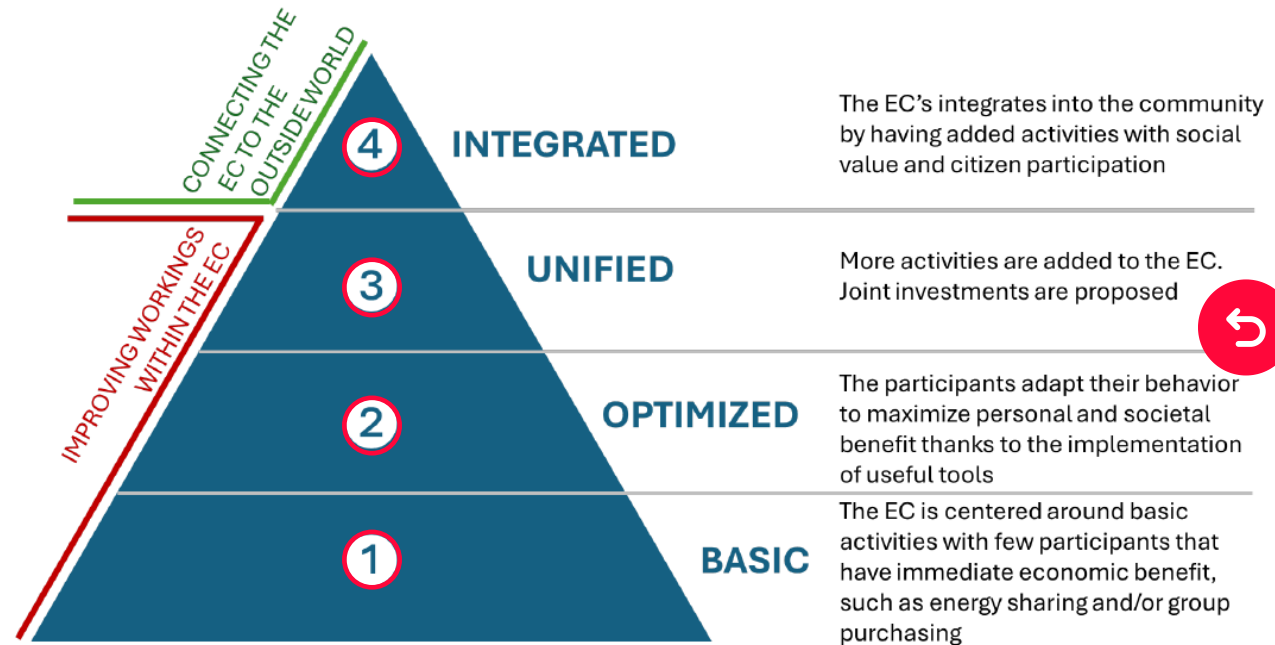


BUSINESS MODEL DESIGN - Recommendations

The business model for energy communities—both industrial or citizen-led—is **still evolving**, largely due to the **partial and uneven transposition of European directives** at the national level. This has resulted in significant disparities among Member States, with national regulatory contexts strongly influencing the speed and complexity of energy community development, often without a clear roadmap.

This **fragmentation** affects the organizational structure of ECs, resulting in a wide **variety of models in practice** and creating **uncertainty** that increases perceived risk for investors and hinders access to financing, particularly in countries where EC models are still at an early stage of development.

To address these challenges and support the long-term deployment of sustainable energy communities, WESHARE proposes a **four-phase implementation approach**.



Step 1- The "Basic" EC



The first step—a “basic” energy community—primarily introduces participating companies to the **energy community concept**. To attract businesses and ensure effective resource mobilization, **participation must deliver immediate financial benefits**. This can be achieved through activities that **maximize short-term economic value**, such as joint energy purchasing or energy sharing among members.

At this stage, involvement should be **limited to existing assets**, with **costs restricted to operating expenses** (e.g. data management, billing) and fully covered by the margins generated by the energy community, thereby **minimizing financial risk** for participants. To further reduce upfront investment, external service providers are recommended for all operational tasks.

Governance should remain simple while ensuring risk mitigation. Participation should initially be limited to a **small number of members** selected for complementary consumption profiles. Where possible, existing structures (such as a business park organization) should be leveraged as the energy community. If none exist, municipalities or local energy agencies can play a key role as facilitators, given their established relationships with local businesses.

Step 2 - The "Optimized" EC



The second implementation step can take place once companies have built sufficient trust in the energy community and its members, and once governance and key processes (benefit allocation, data management, billing) have been streamlined. At this stage, the **focus shifts to optimizing the operation of the energy community.**

Using real operational data, the **business model can be refined** by adjusting energy balances, fine-tuning value distribution, and targeting **new participants** whose profiles complement the existing community. While the core activities, value proposition, cost structure, and governance largely remain as defined in Phase 1, they are progressively improved based on evidence and experience.

In parallel, energy communities should actively engage in **networks and knowledge-sharing initiatives**. As industrial energy communities are geographically bounded and non-competitive, cooperation is essential to exchange best practices, scale successful solutions, and contribute to policy development. Joining or creating second-degree cooperative structures can further enhance efficiency by pooling resources, achieving economies of scale, and accessing specialized expertise at lower cost.

Step 3 - The "Unified" EC



The third step involves consolidating the energy community into a unified model. Building on the trust and track record established in Steps 1 and 2, **the community can expand its scope by adding new activities and proposing joint investments.** For example, an EC initially focused on energy sharing may incorporate collective energy purchasing, deploy EV charging infrastructure, or provide flexibility services to the grid on behalf of its members.

At this stage, the EC can also **undertake joint investments in new renewable generation, battery storage, or internal distribution networks**, significantly affecting both its cost and revenue structure. Supported by a proven operational history, these projects can be financed through external debt.

Importantly, participation in the EC is expected to gradually shift member engagement from a purely economic rationale—essential in the early phases—towards a **stronger emphasis on collaboration and environmental value.**

Step 4 - The "Integrated" EC



The fourth and final step extends the energy community beyond its original boundaries to **include the surrounding ecosystem**. At this stage, the EC can move beyond a purely industrial focus by offering advantageous energy tariffs to nearby residents or reinvesting profits in non-energy services such as childcare facilities, bike sharing, or other initiatives that benefit both companies and the local population.

The **value proposition evolves** accordingly: from a primarily economic focus in Steps 1 and 2, to ecological value in Step 3, and finally to **social value**. In this integrated phase, the energy community acts as a catalyst, strengthening **connections between businesses and residents** and contributing to broader community development.



LICENSING



Licensing ensures that an Industrial Energy Community (IEC) is legally recognised and compliant with grid access, metering and other regulatory requirements. Procedures vary by country, and understanding local regulations is essential.

The process typically begins by engaging with the relevant permitting authority to identify applicable rules and submission requirements. Some countries may have specific application forms, technical guidelines, or timelines to follow.

Obtaining the necessary permits can be lengthy, but once the IEC is authorised, it can operate fully, participate in energy markets, and manage shared assets legally.

“Early consultation with regulators and clear documentation of technical and organisational structures can significantly reduce delays and ensure compliance, supporting a smooth launch of the community.”

WESHARE Team





“

Energy Communities are not just an environmental solution; they are a new strategic pillar of national electricity systems, whose future will be collaborative and intelligent — and it begins in our communities!

”



WESHARE Team



in



WESHARE

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January 2026

The logo features the word "WESHARE" in a bold, white, sans-serif font with a red outline. It is positioned in front of a stylized graphic of four hands in shades of blue and grey, arranged in a way that suggests they are holding or supporting the text.

WESHARE

Title: Selection of viable business models

Project number: 101167685

Date: 29/01/2026