Mapping Legal and Regulatory Framework for P2P energy sharing platforms

U2Demo Insights

September 4 , 2025

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Introduction
U2Demo Project

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Consortium

The U2Demo project brings together a consortium of **18 institutions from eight European countries** including **16 main partners and 2 associated partners.** The project coordinator is the Portuguese R&D Institute INESC-ID.

Legend

- Technology Provider
- Utility
- Research center | University
- Industry
- Foundation/Association
- Municipality
- Services

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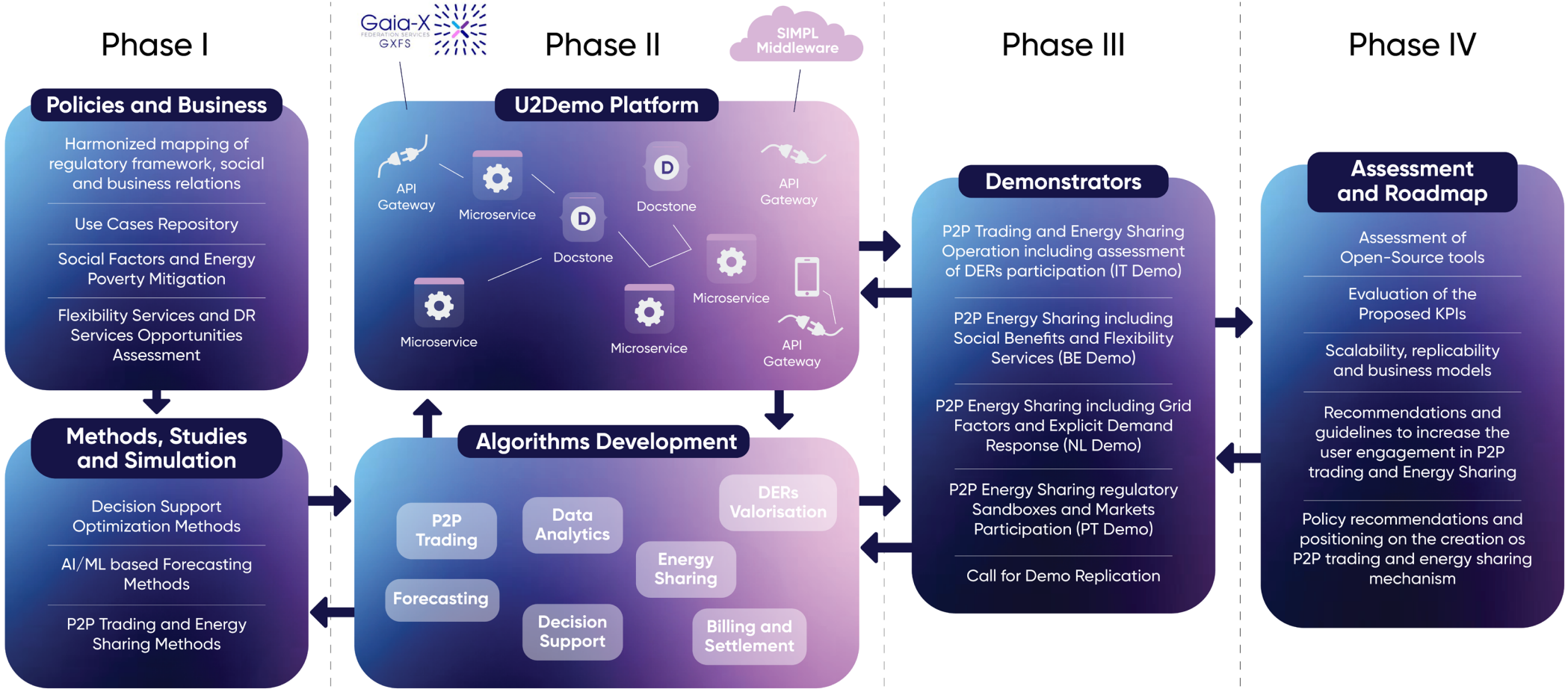
Phase I
Phase II
Phase III
Phase IV
Gaia-X
FEDERATION SERVICES
GXFS
SIMPL
Middleware
Policies and Business
Harmonized mapping of regulatory framework, social and business relations
Use Cases Repository
Social Factors and Energy Poverty Mitigation
Flexibility Services and DR Services Opportunities Assessment
U2Demo Platform
API Gateway
Microservice
Docstone
Docstone
API Gateway
Microservice
Microservice
Microservice
API Gateway
Methods, Studies and Simulation
Decision Support Optimization Methods
AI/ML based Forecasting Methods
P2P Trading and Energy Sharing Methods
Algorithms Development
P2P Trading
Data Analytics
DERs Valorisation
Energy Sharing
Forecasting
Decision Support
Billing and Settlement
Demonstrators
P2P Trading and Energy Sharing Operation including assessment of DERs participation (IT Demo)
P2P Energy Sharing including Social Benefits and Flexibility Services (BE Demo)
P2P Energy Sharing including Grid Factors and Explicit Demand Response (NL Demo)
P2P Energy Sharing regulatory Sandboxes and Markets Participation (PT Demo)
Call for Demo Replication
Assessment and Roadmap
Assessment of Open-Source tools
Evaluation of the Proposed KPIs
Scalability, replicability and business models
Recommendations and guidelines to increase the user engagement in P2P trading and Energy Sharing
Policy recommendations and positioning on the creation os P2P trading and energy sharing mechanism

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Introduction to D1 and Methodology

Lucila de Almeida

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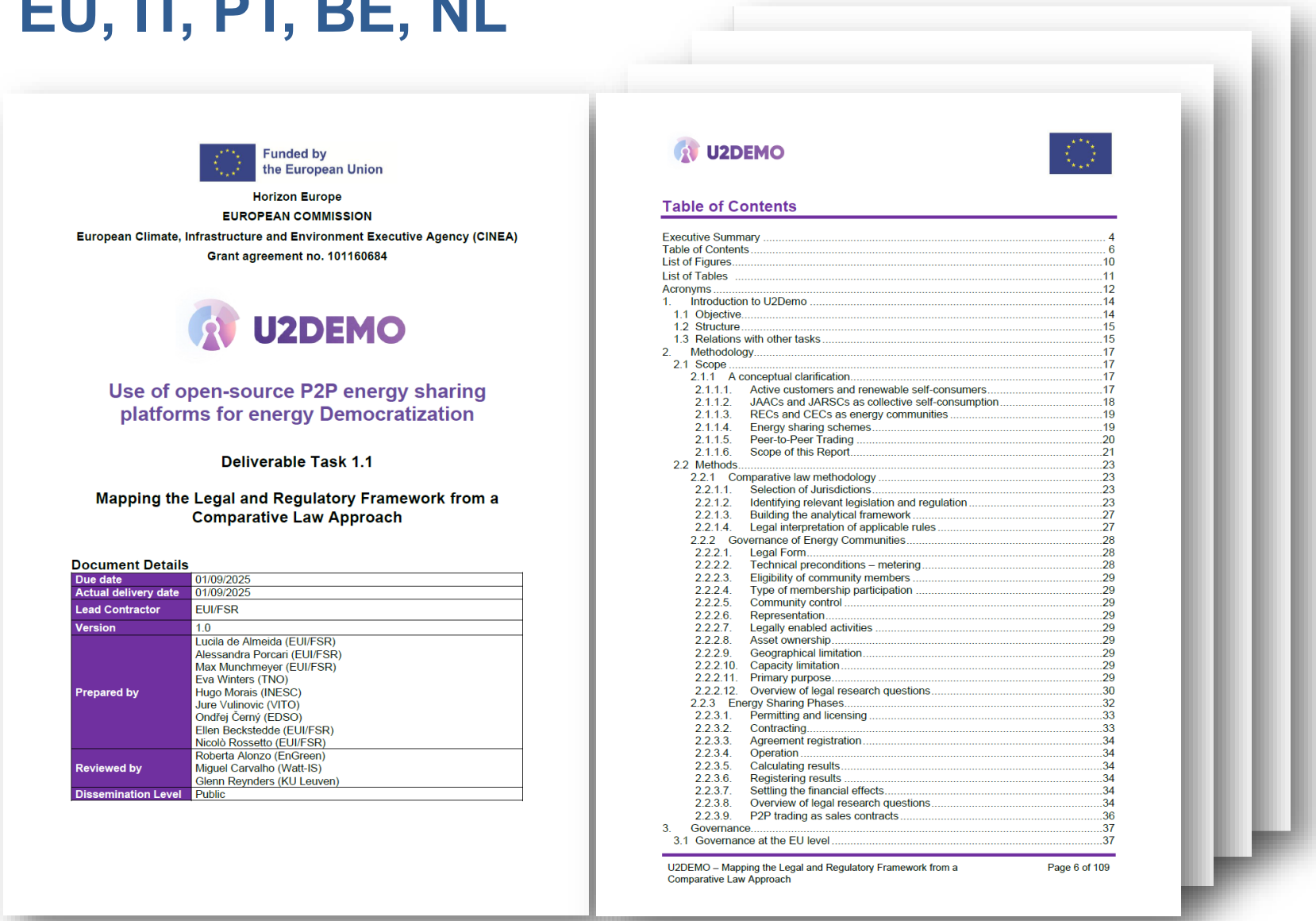
Mapping the Legal Regulatory Framework

EU, IT, PT, BE, NL



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Use of open-source P2P energy sharing platforms for energy Democratization

Deliverable Task 1.1

Mapping the Legal and Regulatory Framework from a Comparative Law Approach

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The report maps the legal and regulatory framework with comparative law methodology, identifying the rules that govern the activities of P2P energy sharing and trading within ECs in the European Union (EU) and its Member States, specifically where the pilots are located: Italy, Portugal, Belgium (in its Flemish region), and the Netherlands.

A Conceptual Clarification

Energy sharing and P2P Trading with Energy Communities

Individual self-consumption	Collective self-consumption	Selling agreements
• Active customer • Renewable self-consumer	• Jointly Acting Active Customers • Jointly Acting Renewables Self-Consumers • **Energy sharing schemes**	• P2P trading

Citizen Energy Communities
Renewable Energy Communities

Methods

Comparative law

Selection of Jurisdictions (Pilot Projects)

European Union (EU)
Italy,
Portugal,
Belgium (Flemish region),
Netherlands

Building the analytical framework

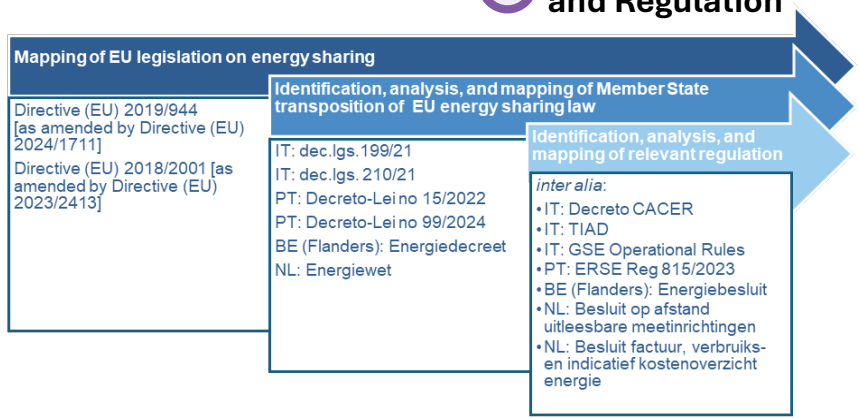
Governance
Energy Sharing

EU Directive and Regulations
Decree-Law transposing EU law
Regulation as Infra-legislative acts

Indentifying Relevant Legislation and Regulation

Textual interpretation
Systemic interpretation

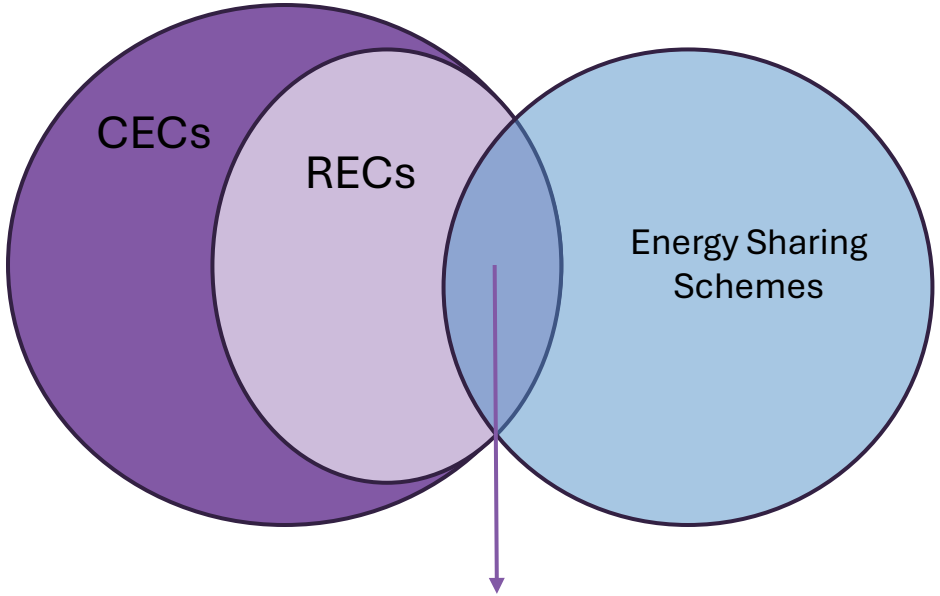
Legal interpretation of applicable rules



Governance

Analytical Framework

Governance	Legal research questions
1. Legal form	- (How) does the law define the legal form of ECs?
2. Technical Preconditions - metering	- Are there technical requirements for membership of an EC, particularly with regard to metering?
3. Eligibility of Community members	- What persons or legal entities can become members of an EC? - Do any additional limitations apply to membership?
4. Type of membership participation	- What conditions attach to the commencement and termination of participation in an EC?
5. Community control	- Does the law define control? - Which EC members have control and under what conditions?
6. Representation	- What administrative duties and activities of the EC may be delegated to third parties and under which circumstances? - Who can be appointed as a representative?
7. Legally enabled activities	- In what activities are ECs entitled to engage?
8. Asset ownership	- Do any limits attach to the ownership of generation assets, for the EC in general and for energy sharing specifically?
9. Geographical limitation	- Do any spatial restrictions apply to the activities which an EC is entitled to engage in, and particularly to energy generation and sharing?
10. Capacity limitation	- Do any capacity limits apply to the generation assets of an EC? - Are there limits on the capacity of generation assets that can be owned by RECs and CECs? - Are there limits on the volume of energy that can be shared within ECs?
11. Primary purpose	- What shall be the primary purpose of ECs? - Are there any limitations or prohibitions?



Particular attention to the governance restrictions introduced with the amendments of Electricity Market Reform

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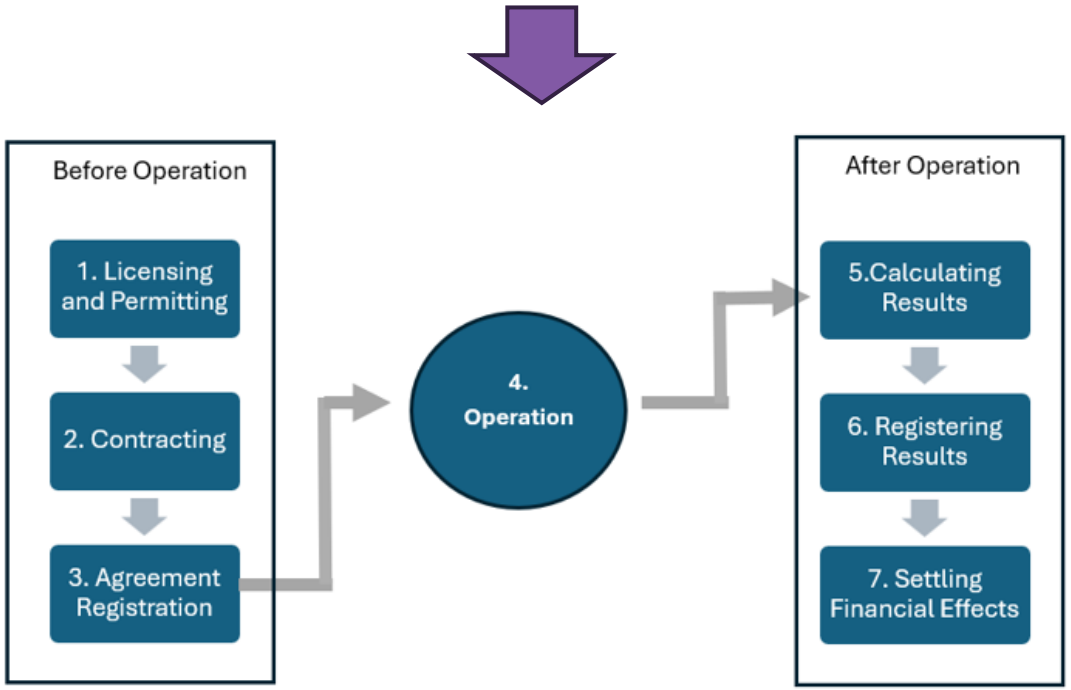
Energy sharing
Analytical Framework

Steps of the process that facilitates energy sharing according to ENTEC



The phases of energy sharing used for the legal mapping in this deliverable

	Phase	Legal research questions
Before operation	**1. Permitting and licensing**	*Licences for the generation unit* - What type of licence/permit is required? - Which authority is competent? - What is the procedural iter? *Licence for registering the energy communities* - What type of licence/permit is required? - Which authority is competent? - What is the procedural iter?
	2. Contracting	*Obligations of a representative sharing/community organiser* - What are the obligations of the sharing/community organiser? - Are there any restrictions on the charge for the community sharing fee? *Sharing keys* - What types of sharing keys are possible? E.g., static v dynamic - How are shared keys defined? - Is there any restriction? E.g., sharing for a fee or for free - Who can adjust them and how often? *Balance responsibility* - Who can/must take balance responsibility?
	3. Agreement registration	- Who is competent to hold the agreement registration? - What are the procedures to register the agreements?
	4. Operation	*Under the assumption that energy sharing is taking place virtually* - Can CECs operate a network as a DSO? - What is the obligation of the DSO in facilitating energy sharing? - What is the obligation of the supplier in facilitating energy sharing? - Is there any operational restriction on sharing energy concerning the ownership of the energy asset?
After operation	**5. Calculating results**	- Who is competent? o When? o How? - Are there any legal restrictions?
	6. Registering results	- Who is competent? o When? o How? - Are there any legal restrictions?
	7. Settling the financial effects	- Can energy communities provide a separate bill for shared energy and/or other energy services? - Does the law specify the structure of the invoice? - What impact, if any, does energy sharing have on the network charges paid by energy communities' members?

Governance in ECs and Energy Sharing

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Governance

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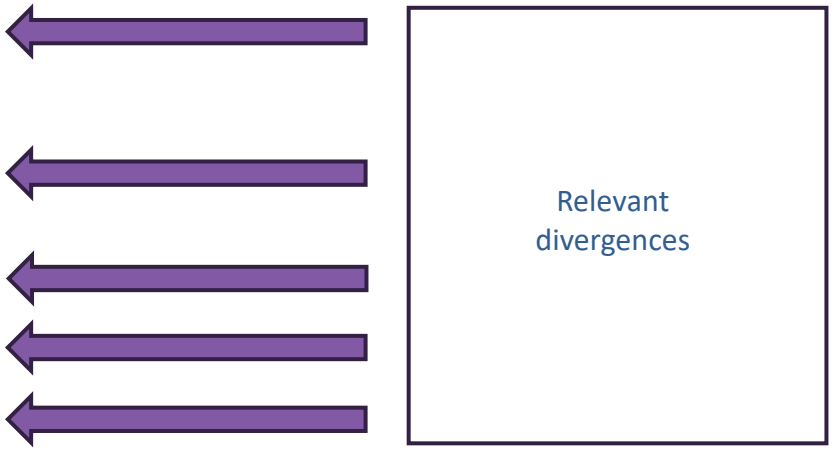


Governance
Eligibility and control

Eligibility:
What persons or legal entities can become members of an EC? Do any additional limitations apply to membership?

Control:
Which EC members have control and under what conditions?

Eligibility	Control
EU law: **REC -** natural persons, SMEs or local authorities, including municipalities **CEC –** open to anyone **Energy sharing -** the same then REC, but Member States has discretion to expand (capacity and geographical restriction).	**EU law:** **REC –** Any eligible member located in the proximity **CEC –** Exclude large enterprises **Energy sharing** – not applicable
Italy: long list for RECs' members; open to anyone for CECs.	**Italy:** RECs' eligible members located in the proximity of the facility; long list for CECs.
Portugal: open to anyone for both RECs and CECs	**Portugal:** RECs and CECs can be controlled by any of their members
Belgium (Flanders): full transposition	**Belgium (Flanders):** full transposition
Netherlands: long list for EC members	**Netherlands:** long list for EC members

Key observations:

- PT open eligibility and control of ECs to anyone
- The eligibility criteria of energy sharing in the EMD reform could restrict sharing within ECs open to large entities (e.g., capacity and geographical).

Governance
Asset Ownership

Asset Onwership:
Do any limits attach to the ownership of generation assets, for the EC in general and for energy sharing specifically?

EU law:

- **CEC and REC -** There is no strict requirement regarding ownership, renting, or leasing of assets installed by individual community members
- **Energy Sharing schemes under Dir. (EU) 2024/1711** - Facility shall be owned, rented, or leased in whole or in part by sharing members. A legal entity incorporating the criteria of a REC or CEC can share with its members electricity generated from facilities they have in full ownership.

Italy: generation and storage facilities shall be under the 'availability and control' of REC and CEC

Portugal: ECs can share renewable energy produced by generation units for self-consumption at its service. UPACs can be owned by community members, but ECs must be registered as their manager (EGAC).

Belgium (Flanders): RECs and CECs must hold property (or user) rights on the facilities

Netherlands: RECs and CECs can own, lease or rent assets

Key observations:

- Homogeneous implementation in analysed Member States
- The asset ownership regime for energy sharing under the EMD reform is aligned with the current framework

Governance
Representation

Representation:

What administrative duties and activities of the EC may be delegated to third parties and under which circumstances?
Who can be appointed as a representative?

EU law:

- **CEC and REC -** EU law does not specify the requirements of the community representative
- **Energy Sharing organiser** role introduced by Dir. (EU) 2024/1711 (art. 15a(3)(a)

Italy: A representative (*Soggetto Referente*) shall be designated for accessing grants and incentives provided by GSE

Portugal: ECs involved in energy sharing must nominate a manager (EGAC), who has a long list of role and responsibilities (e.g., DSO's communication, billing)

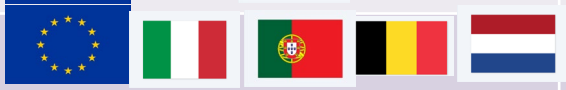
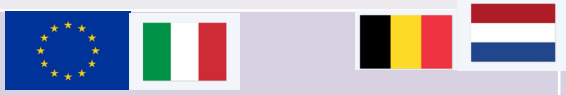
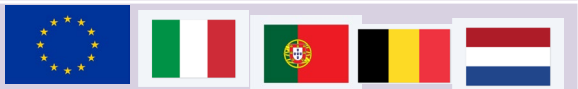
Belgium (Flanders): ECs involved in energy sharing can entrust various activities and duties to a community manager, especially in their interaction with Fluvius.

Netherlands: an 'energy sharing organiser' can be appointed to facilitate energy sharing.

Key observations:

- Diverges about the representative's obligations (ranging from mere contact points to exhaustive list of obligations)
- Changes with the EMD reform

Legally enabled activities

	REC under Directive (EU) 2018/2001	CEC under Directive (EU) 2019/944	Energy Sharing Schemes under Directive (EU) 2024/1711
Production			
Storage			
Sharing			
Selling			
Supply			
Aggregation			
Energy service			
Grid management			
Access suitable markets			
Flexibility			

Key observations:

- PT legislation explicitly regulates energy efficiency services only for CECs
- In BE and NL, legislation does not provide for the CECs' entitlement to manage distribution grids
- Flexibility services can be performed

Energy Sharing

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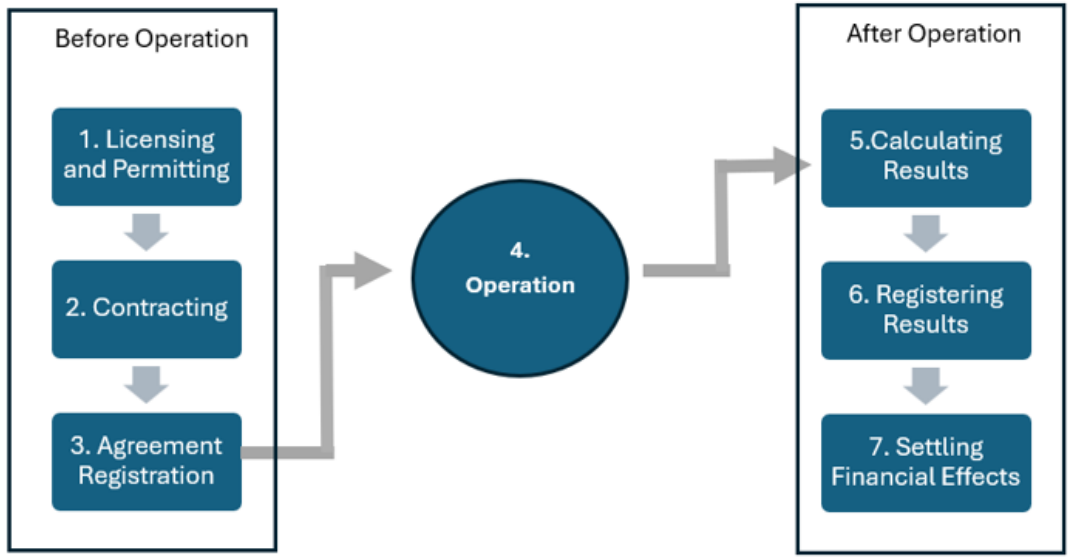
Energy sharing
Analytical Framework



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Energy sharing

Contracting

Obligations of a representative sharing/community organiser
- What are the obligations of the sharing/community organiser?
- Are there any restrictions on the charge for the community sharing fee?

Sharing keys
- What types of sharing keys are possible? E.g., static v dynamic
- How are shared keys defined?
- Is there any restriction? E.g., sharing for a fee or for free
- Who can adjust them and how often?

Balance responsibility
- Who can/must take balance responsibility?

EU: Energy sharing is for a price or free of charge. The calculation method is pre-defined and can be static, variable or dynamic

IT: Sharing happens on a private law agreement and may include sharing keys and conditions governing energy sharing

Portugal: Internal agreement, including rules on joining and leaving, decision making, sharing method (different models are possible), payment of fees and remunerations. Appoint an operational manager of energy sharing

Belgium (Flanders): Agreements contains rules on rights and obligations members, sharing keys, sharing cannot be for a price. Obligation to appoint a manager to communicate with DSO

NL: Currently energy sharing only possible if all participants have the same supplier. Amendment to these rules are published, not approved yet; making supplier Independant energy sharing possible. Sharing based on fixed percentage per 15 min. If the receiver does not consume the energy It is registered as a feed in for the receiving party. Sharing keys can be adjusted with minimum of 1 working day.

Key observations:

- Divergence about what terms and conditions must be included in the sharing agreement (e.g., IT vs PT)
- Divergence about economic benefits: Sharing for free only (BE)
- Divergence in sharing keys: fixed, variable or varieties (NL, PT)

Energy sharing

Agreement registration

- What are the procedures to register the agreements?
- Who is competent to hold the agreement registration?

EU: The DSO/TSO should provide a point of contact to register the agreement/ sharing arrangement.

Italy: No registration at DSO, only with the GSE for the subsidy

Portugal: the internal agreement of the EC should be shared with a governmental body (not NRA) within 3 months after the sharing unit becomes operational. The manager communicates the sharing keys with the DSO.

Belgium (Flanders): Manager registers the community with the DSO: connections participating and if it 'injects or collects'. The agreement is subject to ex-ante tests by the DSO.

NL: The sharing arrangement is registered with the DSO/TSO. EC can appoint a manager but is not mandatory. Contact person is mandatory. DSO responsible for registering the agreement. Contact person provides all the relevant information. Connection provide consent for data sharing with BRP and SUP.

Key observations:

- Divergence in who is competent to hold: DSO only (BE, NL); DSO + governmental body DGEG (PT); or only a governmental entity GSE (IT)

Energy sharing

Operational

Under the assumption that energy sharing is taking place virtually

- Can CECs operate a network as a DSO?
- What is the obligation of the DSO in facilitating energy sharing?
- What is the obligation of the supplier in facilitating energy sharing?
- Is there any operational restriction on sharing energy concerning the ownership of the energy asset?

EU: DSO should facilitate energy sharing and Member States. SUP could not discriminate energy sharing members (including those with fixed-price).

IT: DSO is responsible for monitoring, collecting and validating the energy sharing data per imbalance settlement periods. DSO shares information with GSR. SUP must do the intermediation between final n final users and DSOs.

Portugal: The same role of DSO. DSO shares information with the manager (EGAC), including energy surplus. ECs can be the only suppliers of sharing members, but energy sharing members could enter into a contract with a SUP as a surplus contract.

Belgium (Flanders): The same role of DSOs. DSO contacts SUPs to reduce volume through the energy sharing scheme. SUP could charge incurred costs.

NL: The same role for DSOs. SUP (P2P trader) and BRP are obligated to allow the connected customer to share energy but could charge for incurred costs.

Key observations:

- convergence on the role of DSO;
- Divergences in the roles SUP (vis-a-vis sharing organiser).

Energy sharing

Calculating results

- *Who is competent?(When? How?)*
- *Are there any legal restrictions?*

EU: Active customers are entitled to have the shared electricity injected (..) deducted from their total metered consumption within the ISP. Grid operator or other DB monitor, collect validate, communicate data, and put IT systems in place (for the calculation)

Italy: GSE is in charge for calculating the results, registering them and settling the financial effects. Matching/ calculation on hourly basis.

Portugal: Matching takes place on 15 min and calculation is carried out by the grid operator. The DSO provides the information necessary for invoicing. DSO informs the manager about the surplus produced. The supplier/ aggregator should offer a surplus contract and claim a feed-in tariff.

Belgium (Flanders): DSO provides a point of contact for registering the sharing agreement. The DSO is responsible for calculating the sharing results; once a month based on quarterly-hour data from the previous month. Estimations are used if not all data is available.

Netherlands: Grid operator is responsible for monitoring, collecting, validating the data per ISP. The grid operator calculates the amount of energy. The calculation and accompanying meter data is shared the point of contact and other involved market participants that are active on the accounting point (BRP/SUP)

Key observations:

- DSO is in all countries responsible for the calculations; except from Italy.
- In Portugal, Belgium and the Netherlands the sharing leads to a deduction of total metered consumption

Energy sharing
Registering Results

- *Who is competent?(When? How?)*
- *Are there any legal restrictions?*

EU: Grid operator or other DB is appointed to monitor, collect, validate and communicate metering data with relevant customers and market participants, min monthly. There should be a point of contact that could, if applicable, validate calculation method. No explicit rules on how the results should be registered.

Italy: The results of the hourly matching translates into a contribution that depends on the market price (subsidy per shared kWh) The GSE informs relevant parties via an online platform

Portugal: The network operator is responsible for changing the consumption data, no explicit mentioning of registering the results. However, the DSO provides the information necessary for invoicing. DSO informs about the surplus produced.

Belgium (Flanders): The DSO is responsible for registering the energy sharing results and making them available for parties involved, such as the manager, participating members and reconciliation responsible.

Netherlands The grid operator is responsible for registering the results.

Key observations:

- Except from Italy, the DSO is responsible for registering the results

Energy sharing
Settling Financial Effects

- *Can energy communities provide a separate bill for shared energy and/or other energy services?*
- *Does the law specify the structure of the invoice?*
- *What impact, if any, does energy sharing have on the network charges paid by energy communities' members?*

Key observations:

- **Italy:** the energy sharing happens outside of the process of allocation and reconciliation. No deduction on the consumption (sourcing), no impact on taxes and grid charges: Cash-back model via subsidy
- **Belgium and Portugal:** Opted for an ex-post adjustment: adjustment on the energy bill
- **Belgium (Flanders):** Sharing cannot be for a price. In Flanders, the sharing does not impact the charges, taxes, surcharges and contributions for public service obligations or certificate obligations.
- Impact on other parties: There is a dedicated party responsible for an ex-post financial reconciliation between the BRP, supplier and sharing parties.
- **Portugal:** Sharing leads to a deduction in network charges
- **Netherlands:** Sharing can be for a price, or for free. Sharing has no impact on taxes, levies and grid charges. BRP / supplier might charge for reasonable costs that are incurred.
- Energy sharing model is part of supply: part of allocation

Peer-to-Peer Trading

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Peer-to-Peer Trading

How does P2P trading as implemented in national law interact with the governance and sharing arrangements of energy communities?

EU: Narrow definition under RED (sales contract, automatically executed)

Italy: transposed but not regulated in detail

Portugal: transposed as a legally enabled activity of ECs, but regulation restricts P2P to the trading (direct or through an aggregator) of surplus energy from self-consumption

Belgium (Flanders): regulated in largely the same way as energy sharing, but treated as distinct activity between precisely two active customers

Netherlands: implemented as a form of supply, with P2P-style trading allowed within ECs and exempt from supplier license requirement

Key observations:

- Heterogenous implementation in analysed Member States, particularly with regard to regulatory detail and the degree to which the law specifies whether and how P2P trading arrangements intersect with EC governance and energy sharing
- However, P2P trading as defined in EU law is generally treated as an activity which is independent from, though not incompatible with, EC membership

Thank you for your attention

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Thank you!

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