Funded by the European Union

Horizon Europe

EUROPEAN COMMISSION

European Climate, Infrastructure and Environment Executive Agency (CINEA)

Grant agreement no. 101160684

U2DEMO

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

Deliverable Task 1.1

Mapping Law and Regulation in Energy Sharing and P2P Trading within Energy Communities

Document Details

Due date	01/09/2025
Actual delivery date	01/09/2025
Lead Contractor	EUI/FSR
Version	1.0
Prepared by	Lucila de Almeida (EUI/FSR) Alessandra Porcari (EUI/FSR) Max Munchmeyer (EUI/FSR) Eva Winters (TNO) Hugo Morais (INESC)
Teams involved	Nicolò Rossetto, Ellen Beckstedde (EUI/FSR), Aliene van der Veen (TNO), Jure Vulinovic, Anibal Sanjab (VITO), Ondřej Černý (EDSO), Victoria Deichmann and Diogo Ferreira (INESC), Humberto Queiroz (NEW), Thomas Heylen and Steven Laurijssen (Klimaan), Bart Vanvelthoven (DEN HAAG), Gonçalo Glória (RDN), Lubica Šimkovicová and Andrea Borská (iEPD)
Reviewed by	Roberta Alonzo (EnGreen), Miguel Carvalho (Watt-IS), and Glenn Reynders (KU Leuven)
Dissemination Level	Public

Project Contractual Details

Project Title	Use of open-source P2P energy sharing platforms for energy democratization
Project Acronym	U2Demo
Grant Agreement No.	101160684
Project Start Date	01-09-2024
Project End Date	29-02-2028
Duration	42 months

Document History

Version	Date	Contributor(s)	Description
0.1	01.05.25	L. de Almeida (EUI/FSR) A. Porcari (EUI/FSR) M. Munchmeyer (EUI/FSR) E. Winters (TNO)	Table of contents
0.2	28.06.25	L. de Almeida (EUI/FSR) A. Porcari (EUI/FSR) M. Munchmeyer (EUI/FSR) H. Morais (INESC)	ToC update and analytical framework
0.3	04.08.25	L. de Almeida (EUI/FSR) A. Porcari (EUI/FSR) M. Munchmeyer (EUI/FSR)	Methods and Results (EU, IT, PT, BE)
0.4	21.08.25	R. Alonzo (EnGreen) M. Carvalho (Watt-IS)	Peer review
0.5	22.08.25	E. Winters (TNO)	Results (NL)
0.6	28.08.25	L. de Almeida (EUI/FSR) A. Porcari (EUI/FSR) M. Munchmeyer (EUI/FSR) E. Winters (TNO)	Review Draft Report
0.7	29.08.25	G. Reynders (KU Leuven)	Review by the scientific coordinator
1.0	01.09.25	L. de Almeida (EUI/FSR) A. Porcari (EUI/FSR) M. Munchmeyer (EUI/FSR) H. Morais (INESC)	Final Report

Disclaimer

This document has been produced in the context of the U2Demo[1] project. Views and opinions expressed in this document are however those of the authors only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Acknowledgment

This document is a deliverable of U2Demo project. U2Demo has received funding from the European Union´s Horizon Europe programme under grant agreement no. 101160684.

Funded by
the European Union

[1] https://u2demo.eu/

Executive Summary

Enabled by advancements in technologies, the shift towards decentralised energy systems has renewed focus on innovative models such as energy sharing and peer-to-peer (P2P) trading between active customers. This shift marks a move away from traditional, centralised energy production and distribution models, placing active customers at the centre of the energy transition. Energy sharing and P2P trading offer opportunities for more democratic, flexible, and efficient energy systems. They support the integration of renewable energy sources, enhance local energy resilience, and foster active citizen engagement and economic participation in the energy transition.

However, the feasibility and scalability of sharing and P2P trading schemes are closely tied to the legal and regulatory frameworks that govern energy markets from many aspects, such as governance models of these schemes, rights to access pre-conditional technologies, licences and authorisations, network operations and data management, balancing responsibilities, billing and settlements, sharing of benefits, among others. These changes in governance and behaviour give rise to new roles and responsibilities that must be translated into legal rights and obligations imposed on government institutions and market players.

Through the Clean Energy Package (CEP) in 2018 and 2019, the European Union (EU) advanced significant legal reforms aimed at delivering 'the new deal for energy consumers'. The legal reforms introduced through the Electricity Market Directive (EMD) 2019/944 and Renewable Energy Directive (RED) 2018/2001 harmonised rules that enable active customers, either individually or collectively, to generate, consume, store, sell electricity, or participate in flexibility or energy service schemes. These reforms also allowed active customers to carry out some of these activities via more sophisticated contractual and institutional arrangements, such as P2P trading and energy sharing with Energy Communities (ECs). Furthermore, in the aftermath of the energy crisis, Directive (EU) 2024/1711 amended the Electricity Market Directive by including specific provisions for an energy sharing scheme with detailed rules on roles and responsibilities, complementing the existing framework of energy sharing as collective self-consumption and within ECs.

While the EU, by approving the EMD and RED, advanced legal reforms through Directives, the bindingness of these rules on market participants would depend on their transposition into national legislations and regulations of the 27 Member States of the EU. Many of those rules enshrined in these Directives left some degree of discretion to Member States to transpose these rights and obligations differently. Consequently, this could result in divergent allocation of roles and responsibilities among market players across different Member States when active customers engage in energy sharing and P2P trading.

The primary goal of the U2Demo project is to develop methods, open-source tools, and platforms that address the needs of active customers engaging in P2P sharing and trading within ECs. These platforms must follow principles of openness, agnosticism, interoperability, scalability, replicability, reliability, security, and trustworthiness. Consequently, they need to be suitable for different Member States, which have the discretion to transpose the rules of EMD and RED in varying ways. To ensure the interoperability and scalability of these online platforms, the law and regulation should be mapped to identify differences between governance models, as well as the allocation of rights and obligations for market participants.

This report aims to map the law and regulation that enable the development of consumer-centric models for energy sharing and P2P trading within ECs.

The *scope* of the research is focused on the rules applied to these two activities while being conducted *within* EC. It does so as U2Demo aims to develop an open-access platform to enable energy sharing and P2P trading within ECs. The research of the report begins by mapping the rules enshrined in EU legislation applicable to ECs and their activities of energy sharing and P2P trading. Then it moves to mapping their transposition into the national jurisdictions of four Member States, where the U2Demo pilots are located: Italy, Portugal, Belgium (Flanders), and the Netherlands.

The *methodology* applied to conduct the research relies on comparative law *methodology*, which is based on an analytical approach. Comparative law methodology provides tools that ensure consistency in how to conduct legal analysis in different jurisdictions, considering the margin of discretion of Member States to transpose the Directives approved at EU level into national legislation and regulations. It also provides tools for designing legal research that are traceable and replicable through an analytical approach. The analytical framework we create is intended to firstly map the governance framework of Energy Communities, identifying the restrictions.

The *objective* of mapping law and regulation applicable to the development of consumer-centric models for energy sharing and P2P trading within ECs is to identify the rules that enable these models, as well as the convergence and divergences of these rules vertically, between the EU and Member States, and horizontally, among Member States. The law in the legal and regulatory framework enshrines rights and obligations on governmental institutions and market actors, which then determine roles and responsibilities in consumer-centric models for energy sharing and P2P trading within energy communities. The allocation of roles and responsibilities among different actors by law is what is crucial for the development of methods, open-source tools, and platforms that are compatible with the legal and regulatory framework of Member States.

The *relationship with other tasks and deliverables* is substantial. The importance of mapping the legal and regulatory framework is twofold. First, mapping how the law determines the governance of ECs and distributes rights and obligations among market participants while performing energy sharing and P2P trading is fundamental for the development of an open-source online platform in compliance with the law and adaptable to divergences in transposition among Member States. At this point, the outputs of D1.1 give inputs to WP2, WP3 and WP4. Secondly, the output of D1.1. will serve as a starting point for WP6, more precisely T6.4, where policy recommendations for legal and regulatory reforms will be taking shape according to the output of the U2Demo project.

Table of Contents

List of Figures

List of Tables

Acronyms

Acronym	Original Description	Description in English
ACC	Autoconsumo Coletivo	Collective Self-Consumption
AMC	Automated Meter Reading	Automated Meter Reading
ARERA	Autorità di Regolazione per energia, Reti e Ambiente	Regulatory Authority for Energy, Networks and Environment
AU	Autorizzazione Unica	Single Authorisation
BRP	Balance Responsible Party	Balance Responsible Party
CACER	Configurazioni di Autoconsumo per la Condivisione dell'Energia Rinnovabile	Configurations for Self-Consumption through Renewable Energy Sharing
CBE	Crossroads Bank for Enterprises	Crossroads Bank for Enterprises
CEC	Citizen Energy Community	Citizen Energy Community
CEP	Clean Energy Package	Clean Energy Package
CIEG	Custos de Política Energética, de Sustentabilidade e de Interesse Económico Geral	Costs related to Energy Policy, Sustainability, and General Economic Interest
CUR	Comercializador de Último Recurso	Last resort Aggregator
D	Deliverable	Deliverable
DGEG	Direção-Geral de Energia e Geologia	Directorate General for Energy and Geology
DSO	Distribution System Operator	Distribution System Operator
EC	Energy Community	Energy Community
EGAC	Entidade Gestora de Autoconsumo Coletivo	Self-Consumption Management Entity
EHV	Extra-high Voltage	Extra-high Voltage
EMD	Electricity Market Directive	Electricity Market Directive
ERSE	Entidade Reguladoraa dos Serviços Energéticos	Energy Services Regulatory Authority
EU	European Union	European Union
FEBEG	Federatie van de Belgische Elektriciteits- en Gasbedrijven	Federation of Belgian Electricity and Gas Companies
FeReSO	FEBEG Reconciliation and Settlement Organisation	FEBEG Reconciliation and Settlement Organisation
GA	Grant Agreement	Grant Agreement
GSE	Gestore dei Servizi Energetici	Energy Services Manager
IA	Autonomous Storagea Facility Participating in Self-consumption	Autonomous Storagea Facility Participating in Self-consumption
IC	Consumption Facility Participating in Self-consumption	Consumption Facility Participating in Self-consumption
IPr	Electricity Production Facility for Self-Consumption	Electricity Production Facility for Self-Consumption
IU	Instalação Elétrica de Utilização	Electrical Installation for Use
JAAC	Jointly Acting Active Customer	Jointly Acting Active Customer
JARSC	Jointly Acting Renewable Self Consumer	Jointly Acting Renewable Self Consumer
HV	High Voltage	High Voltage
LV	Low Voltage	Low Voltage

MASE	Ministero dell'Ambiente e della Sicurezza Energetica	Ministry of the Environment and Energy Security
MV	Medium Voltage	Medium Voltage
P2P	Peer-to-Peer	Peer-to-Peer
PAS	Procedura Abilitativa Semplificata	Simplified Enabling Procedure
PPA	Power Purchase Agreement	Power Purchase Agreement
PNRR	Piano Nazionale Ripresa e Resilienza	National Recovery and Resilience Plan
PV	Photovoltaics	Photovoltaics
REC	Renewable Energy Community	Renewable Energy Community
RED	Renewable Energy Directive	Renewable Energy Directive
RESP	Rede Elétrica de Serviço Público	Public Electricity Grid
RND	Rede Nacional de Distribuição	National Distribution Network
RNT	Rede Nacional de Transmissão	National Transmission Network
SME	Small and Medium Enterprise	Small and Medium Enterprise
TIDE	Testo Integrato del Dispacciamento Elettrico	Integrated Text on Electric Dispatching
TIAD	Testo Integrato Autoconsumo Diffuso	Text on Distributed Self-Consumption
TRDE	Technisch Reglement Distributie Elektriciteit	Technical Regulation for the Distribution of Electricity
TSO	Transmission System Operator	Transmission System Operator
UPAC	Unidade de Produção para Autoconsumo	Self-Consumption Production Unit
VAT	Value Added Tax	Value Added Tax
VREG	Vlaamse Regulator van de Elektriciteits- en Gasmarkt	Flemish Regulator for the Electricity and Gas Market
WP	Work Package	Work Package

1. Introduction to U2Demo

The U2Demo project (Use of open-source P2P energy sharing platform for energy DEMOcratisation) aims to advance the field of peer-to-peer (P2P) energy sharing and trading by introducing innovative, user-centric management strategies that promote widespread consumer participation in these mechanisms. The proposed strategies will engage active consumers and encourage equitable and democratic access to sustainable energy resources. These strategies will be developed and seamlessly integrated into tools and platforms that adhere to principles of openness, agnosticism, interoperability, scalability, replicability, reliability, security, and trustworthiness.

The primary outcome of the U2Demo project is the development of methods, open-source tools, and platforms that meet the needs of active customers engaging in P2P trading and energy sharing within Energy Communities (ECs). These tools and platforms will be tested at four selected ECs, each with different characteristics and governance models. These ECs are known as U2Demos pilots. Testing will allow for an evaluation of advanced P2P trading and energy sharing methods, the identification of suitable implementation conditions, and the consolidation of the most promising solutions and corresponding business models. These ECs are located in four different Member States: Italy, Portugal, Belgium (in its Flemish region), and the Netherlands.

1.1 Objective

This report is part of the activities of Work Package (WP) 1. WP1 aims to deliver a harmonised framework describing activities (such as energy sharing and P2P trading) of active consumers (groups) in terms of roles, responsibilities, underlying motivations and social relations. For that purpose, it provides a mapping onto this framework of the regulatory, social, and business context of the U2Demo pilots and future eco-system.

While the WP1 encompasses four tasks, this report covers the research and outcomes of Task (T) 1.1 that focuses on mapping the regulatory framework.

The initial aim of the D1.1 was twofold: one concerns the development of the harmonised activity list; the other refers to the mapping of the regulatory framework departing from the activity list. A set of harmonised activities can now be found in the tasks T1.2 (Annexe I) and T2.1. It is tailored towards the details required to develop a software. Mapping different legal and regulatory frameworks, however, onto this set of harmonised activities has proven to restrict the boundaries of the legal analysis, leaving outside of its scope the relevant rules that impact on enabling energy sharing and P2P trading within ECs, for instance, governance rules setting legally enabled actors, geographical limitations, or licensing.

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. This mapping provides insights into the differences and similarities of governance conditions, restrictions, and responsibilities associated with the activity of energy sharing and P2P trading for active customers within ECs.

1.2 Structure

To fulfil the dual objective of T1.1, D1.1 - *Mapping of Law and Regulation in Energy Sharing and P2P trading within Energy Communities* – follows the structure below:

- *Chapter 2* introduces the report, defines the scope of the research through mapping the legal definition from active customers to a variety of schemes for collective self-consumption at the EU level, explaining the focus on ECs. It also describes the methodology of comparative law applied through an analytical approach. The analytical framework developed to conduct the research is then explained to provide reliability, traceability, and replicability of the results.

- *Chapter 3* maps the legal and regulatory framework that establishes the governance of ECs in EU law and its transposition into national law in four Member States: Italy, Portugal, Belgium (in its Flemish region), and the Netherlands. The legal analysis follows the analytical framework introduced in Chapter 2, which consists of eleven variables: legal forms, technical preconditions, eligibility of community members, type of membership participation, community control, representation, legally enabled activities, asset ownership [community and members], geographical limitation, capacity limitation, and primary purpose. Also, the chapter already integrates into the legal analysis the restrictions in the governance of ECs that engage in energy sharing, according to the amendment of Directive (EU) 2024/1711.

- *Chapter 4* maps the legal and regulatory framework that governs energy sharing activities within ECs in EU law and national law in four Member States: Italy, Portugal, Belgium (in its Flemish region), and the Netherlands. The legal analysis follows the analytical framework introduced in Chapter 2, which is based on seven phases: permitting and licensing, contracting, registration, operation, calculating results, registering results, and settling the financial effects.

- *Chapter 5* maps the legal and regulatory framework that rules the activity of P2P trading (including within ECs) in EU law and national law in four Member States: Italy, Portugal, Belgium (in its Flemish region), and the Netherlands.

1.3 Relations with other tasks

The report serves, among other purposes, as a reference document for the development of the open-source tools. It outlines the key legal requirements concerning contracting, permitting, and settlement processes, which developers must consider in the design phase. For instance, it is essential for developers to understand the legal boundaries within which end-users are permitted to share energy or engage in peer-to-peer trading. Accordingly, the report is directly linked to the research activities that will be developed under WP2, WP3, WP4 and WP6 (Figure 1.1).

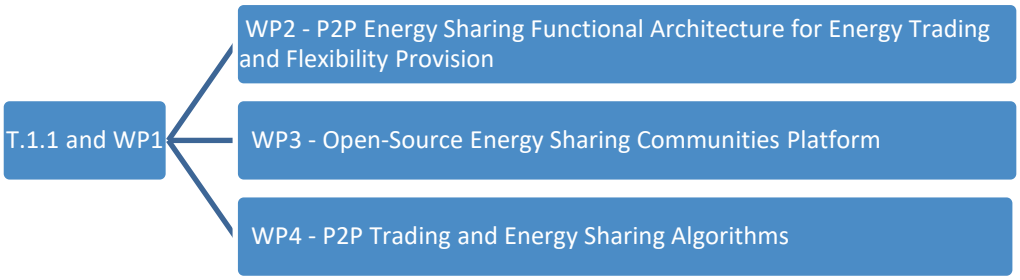

Figure 1.1 – Relationship of T1.1 and WP1 with other WPs

There is also a relationship between T1.1 and T6.4, given the 'Specific Objective' no. 1 (SO1) to reduce the barriers to use open-source tools developed for active consumers and ECs.

Coherently, the existing regulation, as mapped in T1.1, and the conclusions and evidence obtained based on the results of the pilots, should serve as input for T6.4 under WP6 on 'Policy recommendations and positioning on the creation of P2P trading and energy sharing mechanism', to be developed under the lead of EUI.

Specifically, T6.4 intends to formulate a comprehensive policy recommendation and a strategic positioning framework concerning the establishment of P2P trading and energy sharing. The aim is to provide clear guidance for policymakers, stakeholders, and community leaders on creating an enabling environment for the development and success of such energy-sharing initiatives. This work will consider the existing regulation, mapped in Task T1.1, and the conclusions and evidence obtained based on the results of the pilots. This task should result in a comprehensive set of policy recommendations that address legal and regulatory aspects relevant to the creation of P2P energy sharing ECs, formulate guidelines for licensing, grid connection, tariff structures, and the role of Distribution System Operators (DSOs).

Table 1-1: Main expected outcomes and means of verification of SO1

Specific Objective (SO)	Main Expected Outcomes and Means of Verification
SO1: Reduce the barriers to use open-source tools developed for active consumers and ECs.	Mapping of the regulatory (T1.1/ D1.1) social (T1.2/D1.2), business (D1.3/T1.3) under the WP1 → Regulatory guidance and roadmaps under T6.4 (D6.4) Mapping of existing open-source solutions under T1.3(D1.3) and T3.1(D.3.1) Development of open-source modular tools under T3.3(D3.3), T4.2(D4.2) and T4.3(D4.3)

2. Methodology

Chapter 2 is devoted to explaining the methodology. The first subsection (2.1) defines the scope of the research by clarifying the legal terminology used to refer to various collective consumption models within the EU legal framework, which are transposed into national jurisdiction by Member States. It is relevant to underline the scope of this report within the U2Demo project. The second subsection (2.2) explains the comparative law methods applied throughout the research, including the justification for developing the analytical framework that serves as the common ground for the legal analysis from a comparative law perspective.

2.1 Scope

2.1.1 A conceptual clarification

The Clean Energy Package (CEP) advanced significant legal reforms aimed at delivering 'the new deal for energy consumers'[2] in the European Union. The legal reforms introduced through the Electricity Market Directive (EU) 2019/944 (EMD) and Renewable Energy Directive (EU) 2018/2001 (RED) harmonised rules that enable active customers, either individually or collectively, to generate, consume, store, sell or share electricity, as well as participate in flexibility or energy service schemes.

Since the reforms introduced in the CEP, active customers have access to a variety of governance models for performing self-consumption individually or as a group. It can range from simple individual self-consumption to more complex governance models. A simple individual self-consumption is the starting point for defining an active customer and renewable self-consumer (Section 2.1.1.1). It can then advance to collective self-consumption[7] modes associated with the definition of Jointly Acting Active Customers (JAACs) and Jointly Acting Renewables Self-Consumers (JARSCs) (Section 2.1.1.2). It can also evolve into more complex modes of collective self-consumption, which are embedded in regulated contractual and institutional arrangements. These are the EC's modes (2.2.1.3), and the amendment of the EMD by Directive (EU) 2024/1711 on energy sharing, as outlined in Article 15a. For the latter, EU law introduced specific provisions for the energy sharing scheme with more detailed rules on roles and responsibilities, complementing the existing legal framework of JAACs, JARSCs and ECs (Section 2.2.1.4). Lastly, there are modes of exchange that are legally defined as P2P trading (Section 2.1.1.5), which differ from collective self-consumption in that they involve sales contracts. Nevertheless, P2P trading falls within the scope of the U2Demo project, as explained in the last subsection (Section 2.1.1.6).

2.1.1.1. Active customers and renewable self-consumers

The term 'active customer' is defined in Article 2(8) of EMD. A similar definition is found in the RED, coined as a renewable self-consumer (Article 2(14) RED).

[2] European Commission, 'A New Deal for Consumers', (Communication), COM(2018) 183 final

Active customers and renewable self-consumers are defined according to the eligibility criteria, the list of activities they could perform, and whether there could be geographical limitations to the operation of these activities.

Table 2-1: Definition of active customer and renewable self-consumer

	Legal Definition of Active Customer (Art 2(8) EMD)	Legal Definition of Renewable Self-Consumer (Art 2(14) RED)
Eligibility	final customer, *or a group of jointly acting final customers*, whose activities do not constitute its primary commercial or professional activity	Final customer whose activities [listed below] do not constitute its primary commercial or professional activity
Legally enabled activities	(i) Consume or store electricity generated within its premises located within confined boundaries; (ii) self-generated electricity within other premises; (iii) shared electricity within other premises; (iv) participates in flexibility; or (v) participants in energy efficiency schemes	(i) Generate renewable electricity for its own consumption; (ii) store self-generated renewable electricity; (iii) sell self-generated renewable electricity;
Geographical limitation	Applied to consume or store electricity generated	Operation within its premises located within confined boundaries or, where permitted by a Member State, within other premises.

The definition of active customers encompasses a list of activities that final customers are entitled to perform individually or collectively, for the latter, acting jointly. This includes shared electricity within other premises (amended by Directive (EU) 2024/1711). When active customers jointly act, they can do so through collective consumption models, such as JARSCs and JAACs, as explained in the following section.

The definition of active customers is broader than renewable self-consumers. Furthermore, the U2Demo project explicitly references active customers. Thus, this study focuses on active customers as defined in the EMD.

The rules applied to active customers are relevant to the legal analysis in this report. Those engaged in ECs must retain their rights and obligations as active customers. These provisions are found in both RED and EMD for RECs and CECs (Article 16(1)(c) EMD and Article 22(1) RED). Therefore, the rules applied to active customers in Article 15 EMD are relevant for the legal analysis.

2.1.1.2. JAACs and JARSCs as collective self-consumption

Article 2(8) of the EMD states that final customers could conduct activities as a group of jointly acting final customers. When they do so, they engage in a collective self-consumption, which we coin as JAACs. JAACs are a group of active customers who consume or store electricity generated within their premises (located within confined boundaries), or who consume self-

generated or shared electricity from other premises. They may also sell self-generated electricity or participate in flexibility or energy efficiency schemes, provided that these activities do not constitute their primary commercial or professional activity.

Likewise, the RED also introduced the definition of collective self-consumption models in Article 2(15) definition, JARSCs operate within their premises located within confined boundaries or, where permitted by a Member State, within other premises; they generate renewable electricity for their own consumption, and they may store, share or sell self-generated renewable electricity, provided that, for a non-household renewables self-consumer, those activities do not constitute their primary commercial or professional activity. Moreover, they shall be located in the same building or multi-apartment block (Article 2(14) and (15) Directive (EU) 2018/2001 (RED II)).

Table 2-2: Definition of JAACs and JARCs

	Legal Definition of JAACs (Art 2(8) EMD)	Legal Definition of JARSCs (Art 2(14) and (15) RED)
Eligibility	The same applied to active customers.	The same applies to renewable self-consumers.
Legally enabled activities	The same applied to active customers.	The same applies to renewable self-consumers.
Geographical limitation	The same applied to active customers.	The same applies to renewable self-consumers, in additional, operations shall be located in the same building or multi-apartment block.

This report is focused on energy sharing activities within ECs. Therefore, the rules applied to collective self-consumption outside ECs, such as JAACs and JARSCs, are not relevant unless there is legislation expanding these activities to the CECs and RECs, for instance, as has been done by Portugal in the transposition of the EMD and RED.

2.1.1.3. RECs and CECs as energy communities

ECs are at the core of this report and the U2Demo project. ECs have been introduced into the EU regulatory framework by the CEP in 2018 and 2019, which defines two different models of ECs. The RED II introduced the concept of Renewable Energy Communities (RECs) (Article 2(16) RED II), while the EMD set the definition of Citizen Energy Communities (CECs) (Article 2(11) EMD).

ECs constitute a type of legal entity integrated into energy markets that distinguishes itself from other market players due to its membership structure, governance requirements, enabled activities, and purpose. Chapter 3 is devoted to exploring the governance features of the ECs (see also Section 2.2.2).

2.1.1.4. Energy sharing schemes

With the amendments of the EMD through Directive (EU) 2024/1711, EU law introduced specific provisions for the energy sharing scheme under Article 2(10a) and Article 15a of the EMD. Energy sharing is defined in Article 2(10a):

> 'Energy sharing means the self-consumption by active customers of renewable energy either: (a) generated or stored offsite or on sites between them by a facility they own, lease or rent in whole or in part; (b) right to which has been transferred to them by another active customer for a price or free of charge'.

The provisions of Article 15a EMD introduce new rights to enable active customers to engage in energy sharing, as well as new obligations to these and other market players as DSOs, suppliers, and sharing organisers.

Although Directive (EU) 2024/1711 has not yet been transposed in all Member States, it is reasonable to argue that these amendments, once transposed, will have potential effects on the energy sharing organised as collective self-consumption and within ECs. According to recital 22 of Directive (EU) 2024/1711, the provisions on energy sharing laid down in this amendment complement the provisions concerning collective self-consumption as JAACs and JARSCs, laid down in Article 21 of the RED and Article 15 of the EMD. Therefore, energy sharing provides more detailed rules for enabling collective self-consumption.

Moreover, in recital 23 of the same Directive, the EU legislator explained that:

> Energy sharing arrangements that are organised through a legal entity that incorporates the criteria of CEC or RECs could share with their members electricity generated from facilities they have in full ownership.

The purpose of recital 23 is to ensure a harmonised interpretation that Article 15a does not overrule the provisions regulating sharing within ECs (Article 22(2)(b) RED and Article 16(3)(e) EMD), which restrict energy sharing to electricity generated by production units owned by ECs.[3] On the other hand, Member States would retain the discretion to expand energy sharing to ECs, as some Member States have already expanded collective self-consumption to them.

It is worth noticing that, recently, the BRIDGE, the European Commission initiative that brings together projects from Horizon Europe with a focus on smart energy systems, published on 31 July 2025, a report on energy sharing by the Working Group on Regulation. This BRIDGE's report claims that Article 15a of the EMD introduced energy sharing as an activity, distinguishing it from the legal framework of ECs [1]. In this report, we perceive Article 15a as more than a set of rules regulating an activity at its operational level, but as a set of measures imposing restrictions on the governance of contractual and legal entities. This report returns to this claim in section 2.1.1.6, while explaining the scope of this report.

2.1.1.5. Peer-to-Peer Trading

The definition of P2P trading has been introduced into the EU legal order through the CEP in 2018, more precisely in the RED II. Article 2(18) RED II provides that:

[3] See section 3.1.8.

Table 2-3: Definition of P2P trading under Article 2(18) of the RED

	P2P trading (Art 2(18) RED)
Eligibility	Any market participant, including final customers, producers, suppliers or aggregators, without prejudice to the rights and obligations.
Legally enabled activities	Sale of renewable energy
Means as a limitation	Sales contract with pre-determined conditions governing the automated execution and settlement of the transaction, either directly between market participants or indirectly through a certified third-party market participant, such as an aggregator.

There is an important nuance in the legal definition of P2P trading that is crucial to this report and the U2Demo Project from a legal and regulatory perspective. P2P trading, as defined in the RED II, concerns a 'sales contract'. By applying a systemic interpretation of the provisions of the RED II, as well as EMD, it is conclusive that EU Law distinguishes P2P trading (as a sales contract) and sharing as different legal forms of exchanging energy. This distinction becomes undeniable when the provision of P2P trading is interpreted together with the definition of RECs and CECs in the RED and EMD, as we will explore in Chapter 3. There, EU law entitles ECs to sell energy (Article 2(16) RED and Article 2(11) EMD) and to share energy (Article 22(2)(b) RED and Article 16(3)(e) EMD), determining the rights and obligations derived from these activities differently. This distinction between P2P trading being a sales contract and energy sharing being a distinct type of energy exchange has been reinforced by the amendment that introduced the definition of energy sharing in Article 15a of Directive (EU) 2024/1211. It is worth noting that this provision defines energy sharing as an activity that can be conducted 'for a price or for free' (Article 2(10a)(b) EMD). It means that energy sharing remains as such even when there is a price remuneration behind it. The topic of energy sharing, introduced in the last reform of the EMD, deserves further attention in the section below.

The distinction between P2P trading and sharing energy is substantially important for mapping the legal and regulatory framework. In P2P trading, some rights and obligations are applied to market participants involved in the sale of energy that are not applied to sharing schemes, and vice versa, including licenses, taxes, levies, balancing responsibilities, and obligations not to facilitate these exchanges imposed on DSOs and suppliers.

On the other hand, we acknowledge that being consistent with the legal definition of P2P trading as a sales contract might be a source of conceptual confusion in interdisciplinary discussions. It is common to see non-legal publications use the terminology of P2P trading to refer to operations that are not automated sales contracts between peers but are collective self-consumption or energy sharing schemes. Thus, it is essential to emphasise that this report is consistent with the legal definition of P2P trading as a sales contract.

2.1.1.6. Scope of this Report

The primary goal of the U2Demo project is to develop methods, open-source tools, and platforms that address the needs of active customers engaging in energy sharing and P2P trading *within* ECs. For this reason, **this report focuses on mapping the legal regulatory framework applied to active customers that enables sharing energy and P2P trading *within* ECs, specifically**.

The primary focus of the legal analysis is interpreting the rules enshrining rights and obligations applied to market actors involved in the EC in these two activities – energy sharing and P2P trading. Therefore, the scope of this report has three focal points: ECs, energy sharing, and P2P trading.

Energy communities, as mentioned earlier (2.1.1.3), are legal entities whose governance framework is set by EU law. The CEP has introduced ECs in the EU legal framework as CECs and RECs through the EMD and RED II, respectively. CECs and REDs are similar legal entities, but with differences that extend beyond the source of energy generated by their units (renewables or non-renewables). These differences are reflected in a set of governance rules, which range from measures determining the eligibility of community members, the types of eligible activities, the right to hold community control, and geographical limitations. The scope of this report encompasses mapping the governance of ECs, considering the differences between the governance of CECs and RECs in EU law, as well as how Member States have transposed these differences into national law. Moreover, it is worth noting that the amendment of Directive 2024/1711, introducing the provision of energy sharing schemes in Article 15a, has added a layer of governance measures for the legal entities performing energy sharing, which will therefore impact ECs engaged in this activity. The scope of this report encompasses the latter reform of the EMD for the legal analysis of EU law. Still, it avoids speculation on how selected Member States would implement these provisions in their national law before officially transposition (Chapter 3).[4]

Energy sharing, as an activity, has been introduced into EU law by the CEP already. It did so when the EMD and RED II enabled active customers and renewable self-consumers to engage in collective self-consumption (2.1.1.1), referred above as JAACs and JARCSs (2.1.1.2). Moreover, both EMD and RED II enabled CECs and RECs to share the energy produced by their own generation units. Therefore, the scope of this report encompasses the legal and regulatory frameworks of energy sharing from a broad perspective, beginning with how member states have transposed the provision of EMD and RED II for collective self-consumption, as well as energy sharing as an enabled activity of ECs. To ensure the future-proofing of this report, the scope of this report incorporates Directive (EU) 2024/1711 into the legal analysis, while mapping the legal framework at the EU level. For the selected Member States, we have integrated into the analysis the provision of energy sharing insofar as Directive (EU) 2024/1711 has been officially transposed into national law by 31st July 2025[5] or, at least, where an advanced public draft is available, close to being approved by the competent legislative bodies, which is the case for the Netherlands.

P2P trading, as an activity, has been introduced into the EU law by the CEP, specifically RED II. The scope of this report aligns with the legal definition of P2P trading as a sales contract, as defined in EU law and transposed by Member States, and distinguishes it from energy sharing. We must do so to ensure we fulfil our role of U2Demo in mapping

[4] According to Article 3(1) of Directive 2024/1711 on transposition, member states should have brought it into force the Directive by 17 January 2025, but by derogation, could have extended the deadline until 17 July 2026.
[5] Idem.

the legal and regulatory framework at the EU and selected Member States with accuracy.

2.2 Methods

2.2.1 Comparative law methodology

To map the legal and regulatory frameworks that enable the development of consumer-centric models for energy sharing and P2P trading within ECs, the research conducted applied comparative law methodology.

Comparative law methodology is a research approach that examines and contrasts legal systems of different countries or jurisdictions. It involves identifying similarities and differences in rules, legal principles, institutions, and practices to gain a deeper understanding of law and its application in various contexts. By employing comparison as a logical and inductive method, individuals can objectively evaluate the strengths and weaknesses of a specific standard, rule, framework, process, or institution relative to others. In the context of legal research, comparison entails examining legal experiences across various contexts and jurisdictions to form evaluative conclusions [2].

Comparative law methodology employs distinct techniques for examining and contrasting legal systems. Mark Van Hoecke outlines six widely used approaches in comparative legal research: (1) analytical, (2) functional, (3) historical, (4) structural, (5) law-in-context, and (6) common-core. Together, these methods form a comprehensive toolkit for conducting comparative legal analysis. [3]

This research that supports this report relies on *Analytical methods*. The crucial part of the research, while adopting the analytical approach to comparative law methodology, is the design of the analytical framework. The analytical framework identifies relevant questions and sub-questions addressed consistently to multiple legal orders. This involves examining and contrasting legislation and regulations, mapping the applicable rules, and interpreting them through textual and systematic methods of legal interpretation.

The research has applied the comparative law methodology with an analytical approach following these four steps: (2.2.1.1) selecting legal orders to be compared, (2.2.1.2) mapping the relevant legislation and regulation within the selected jurisdictions, (2.2.1.3) building the analytical framework, and (2.2.1.4) interpreting how they could apply to a particular subject or a specific issue in multiple legal systems.

2.2.1.1. Selection of Jurisdictions

The first step consists of selecting the jurisdictions to be compared. In this case, the U2Demo project consists of the mapping of the EU law in addition to four Member States: Italy, Portugal, Belgium (in its Flemish region), and the Netherlands. As explained in the GA, the selection of Member States is derived from the selection of pilots, which considers the differences in characteristics and governance models.

2.2.1.2. Identifying relevant legislation and regulation

The second step in mapping the legal and regulatory framework that enables active customers to engage with energy sharing and P2P trading within ECs is to identify the relevant rules applicable to ECs and these respective activities.

This report takes into consideration not only all relevant legislation approved by legislative bodies at the EU and Member States, but also any regulations that are binding on market participants in Member States. The latter encompasses not only Decree-laws, but resolutions issued by regulatory authorities or executive bodies acting under conferred powers. Therefore, the scope of this report encompasses the mapping of the vertical and horizontal legal and regulatory frameworks, including the EU's rules and their perspective on transposition by Member States.

EU Law

The mapping of the European legislation includes the following acts:

- Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources ('Renewable Energy Directive', RED), as amended by Directive (EU) 2023/2413 and by Directive (EU) 2024/1711;

- Directive (EU) 2019/944 on common rules for the internal market for electricity ('Electricity Market Directive', EMD), as amended by Directive (EU) 2024/1711.

Further legislation is introduced and considered in the text where necessary to complement the above Directives in order to conduct a complete mapping, such as Regulation (EU) 2019/943 on the internal market for electricity.

Italian Law

The mapping of the Italian framework on energy communities revolves around Legislative Decree n. 199 of 8 November 2021 and Legislative Decree n. 210 of 8 November 2021, which respectively implement the Renewable Energy Directive and the Electricity Market Directive.

The legal analysis concerning the governance of energy communities and the activities of energy sharing and P2P trading in Italy primarily requires investigation at the legislative level, but also at the regulatory level. The latter includes the following acts:

- The incentive mechanisms supporting electricity generated from renewable energy facilities within 'self-consumption configurations for renewable energy sharing' ('*configurazioni di autoconsumo per la condivisione dell'energia rinnovabile*') are governed by Decree of the Ministry of the Environment and Energy Security n. 414/2023 (commonly referred to as 'CACER Decree').[6]

[6] Ministry of the Environment and Energy Security (MASE), <https://www.mase.gov.it/portale/documents/d/guest/decreto-cer-pdf> accessed 28 August 2025.

- The modalities and economic regulation relating to the electricity subject to distributed self-consumption, pursuant to Legislative Decrees 199/21 and 210/21, are governed by the Integrated Text on Distributed Self-Consumption ('*Testo Integrato Autoconsumo Diffuso*', TIAD) [7] issued by the Regulatory Authority for Energy, Networks and Environment ('*Autorita di Regolazione per energia, Reti e Ambiente'*, ARERA).

- The 'Operational rules for access to the distributed self-consumption service and the PNRR contribution' ('*Regole operative per l'accesso al servizio per l'autoconsumo diffuso e al contributo PNRR*')[8] were drafted by the Energy Services Manager ('*Gestore dei Servizi Energetici*', GSE) pursuant to Article 11 of the CACER Decree and Article 11 of Annexe A to TIAD.

Further legislation is introduced and considered in the text where necessary to complement the above documents in order to conduct a complete mapping, particularly in Section 4.2.1 on permitting and licensing rules for energy sharing in Italy.

Portuguese Law

The mapping of the Portuguese legal and regulatory framework for EC governance, energy sharing, and P2P trading is based principally on the following legislative and regulatory acts:

- Decree-Law No. 15/2022, of 14 January, which transposed the EMD and RED II.

- Decree-Law No. 99/2024, of 3 December, which amended Decree-Law No. 15/2022 to transpose to Portuguese law Directive (EU) 2023/2413, also known as RED III.

- Regulation No. 8/2021, of 7 April, of the Energy Services Regulatory Authority (ERSE),, which approves the regulations for implementing the self-consumption regime in its areas of competence, under Article 13(4) and Article 16(14) and (15) of Decree -Law No. 162/2019, of 25 October, establishes the provisions applicable to the exercise of renewable energy self-consumption activity, when connected to the Public Service Electricity Network (RESP), as well as to renewable energy communities that carry out self-consumption activity.

- Directive No. 1/2021, of 8 January, of the Energy Services Regulatory Authority (ERSE), which approves the tariffs and prices for electricity and other services, namely the tariffs for access to mobility networks and those applicable to self-consumption, to be in force in 2021.

[7] The TIAD corresponds to the Annex A to ARERA Resolution 727/2022/R/eel as integrated and amended by Resolution 15/2024/R/eel. Regulatory Authority for Energy (ARERA), Networks and Environment, <https://www.arera.it/fileadmin/allegati/docs/22/727-22TIAD.pdf> accessed 28 August 2025.

[8] Energy Services Manager (GSE), <https://www.gse.it/documenti_site/Documenti%20GSE/Servizi%20per%20te/AUTOCONSUMO/Gruppi%20di%20autoconsumatori%20e%20comunita%20di%20energia%20rinnovabile/Regole%20e%20procedure/ALLEGATO%201%20Regole%20Operative%20CACER.pdf> accessed 28 August 2025.

- Order No. 1177/2024, of 31 January, establishes the conditions for exemption from CIEG charges levied on network access tariffs determined by ERSE, to be applied to self-consumption conveyed through the public electricity network (RESP).

Further legislation is introduced and considered in the text where necessary to complement the above documents in order to conduct a complete mapping, particularly in Section 4.3.1 on permitting and licensing rules for energy sharing.

Belgian Law (Flanders)

The mapping of the Flemish legal framework for EC governance, energy sharing, and P2P trading is based principally on four legislative and regulatory acts.

- The decree Containing General Provisions Concerning Energy Policy (*'Decreet houdende algemene bepalingenbetreffende het energiebeleid'*) of 8 May 2009, which, since its entry into force, has been amended 87 times, *inter alia* as the principal means of transposing Directives (EU) 2018/2001 and 2019/944. See [4]. The law is referred to as the Energiedecreet.
- The decision of the Flemish Government containing general provisions on energy policy ('*besluit van de Vlaamse Regering houdende algemene bepalingen over het energiebeleid*') of 19 November 2010, the implementing act subordinated to the Energiedecreet, which, *inter alia*, provides more detailed provisions and conditions for EC governance, energy sharing and P2P trading. The decision is referred to as the Energiebesluit.
- The technical regulations for the distribution of electricity in the Flemish Region ('*Technisch Reglement Distributie Elektriciteit*') (TRDE) of 24 March 2023 and amended on 22 November 2024, which provides the detailed regulation for energy sharing as regards the parties involved in the electricity distribution network.
- The protocol for energy sharing, peer-to-peer sales and energy sales in buildings ('*protocol energiedelen, persoonaan-persoonverkoop en verkoop in gebouwen*'), version 3.2, by Flemish DSO Fluvius ('the Protocol'), which provides the detailed procedure for energy sharing in Flanders as mandated by Articles 4.3.64-4.3.66 of the TRDE.

Further legislation is introduced and considered in the text where necessary to complement the above documents in order to conduct a complete mapping, particularly in Section 4.4.1 on permitting and licensing rules for energy sharing in Flanders.

Dutch Law

The mapping of the Dutch legal framework for the governance of energy communities, energy sharing and peer-to-peer trading is based on the following legislative acts and proposal:

- The Energy Act (*Energiewet: Wet van 11 december 2024, houdende regels over energiemarkten en energiesystemen*) The law was recently adopted and will be in effect from January 1st, 2026.
- The Heat Act (*Wet collectieve warmte: Regels omtrent productie, transport en levering van warmte*). The Heat Act has been adopted by Parlement in July 2025 and is awaiting approval from the Senate.
- Proposal for implementation EMD-reform, amending the Energy Act (*Wijziging van de Energiewet ter implementatie van het EU wetgevingspakket inzake het verbeteren*

van de opzet van de elektriciteitsmarkt van de Unie en de verbetering van de bescherming van de Unie tegen marktmanipulatie op de groothandelsmarkt voor energie) publication date November 8th, 2024

Further legislation is introduced and considered in the text where necessary to complement the above documents.

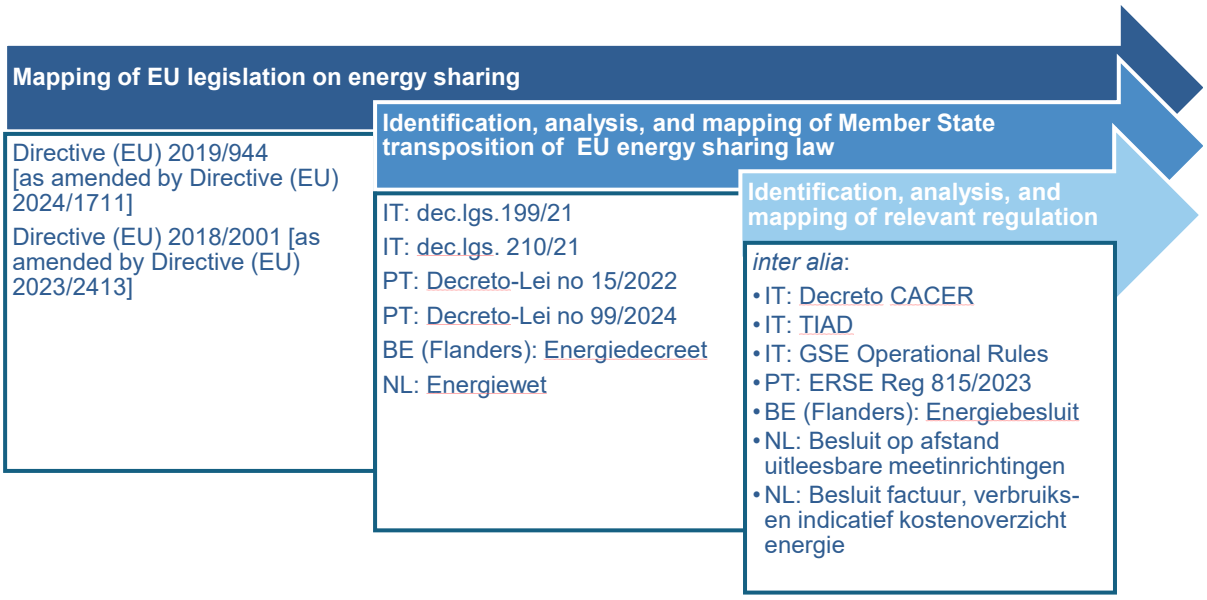

Figure 2.1 – Steps and elements of legislative mapping

2.2.1.3. Building the analytical framework

The third and most complex step of the comparative law methodology is the development of the analytical framework. The analytical framework consists of defining the subject of research and the legal issues that will be addressed systematically to analyse and interpret the rules across multiple legal systems. The use of an analytical framework ensures consistency of the legal analysis, as well as reliability and replicability of the results.

The analytical framework must be aligned with the objectives of T1.1. Considering the primary purpose of T1.1 is to map the legal and regulatory rules that enable active customers to share energy and engage in P2P trading within ECs, D1.1. develops three analytical frameworks. These include governance of energy communities (2.2.2), energy sharing phases (2.2.3), and P2P trading as a sales contract (2.2.3). The first one focuses on the organisational rules of the ECs. In contrast, the second and third dive into the rules applied to enabling the activities of energy sharing and P2P trading. Each analytical framework is explained below.

2.2.1.4. Legal interpretation of applicable rules

To answer the questions raised in the analytical framework, it is necessary to proceed with a legal interpretation of the rules, considering how they would apply to specific organisations or activities.

Legal interpretation refers to the process by which judges and lawyers examine legal texts to understand their meaning. This often involves focusing on the plain language of the text, but may also include considering external evidence when the text is ambiguous. The process consists of different interpretive approaches, such as textualism, systematic, intentionalism or purposivism, or originalism [5], [6] [9].

The research has used textualism and systematic legal interpretation methods:

- *Textualism*: this approach emphasises the plain meaning of the words used in the legal text. It prioritises the literal interpretation of the language, focusing on the ordinary meaning of the words without delving into legislative history or other external factors [7].

- *Systematic interpretation*: it considers the legal text within the broader legal context, including other related laws and the overall legal system. It aims to ensure that the interpretation is consistent with the rest of the legal framework [8].

2.2.2 Governance of Energy Communities

When the CEP introduced the ECs into the EU legal order, it did so by approving a set of rules concerning how ECs are governed as legal entities – e.g., their legal form, who could be members, who could hold their power, the activities they could perform, or the assets they could own or incorporate into their operations. These rules can be understood as the governance rules of energy communities, which shape these institutions and are applicable regardless of the activities they perform as market players.

Despite the variety of concepts applied to governance in different academic disciplines, one can identify a minimum content, a common core, which is the one adopted in this report. Governance may be understood as rules that are constitutive of institutions and that determine their internal operations, such as decision-making within them, whether they are public or private institutions [9], [10].

The analytical framework identified eleven variables in the rules establishing the ECs' governance. The following subsections (2.2.2.1-2.2.2.11) outline the legal research questions (see table 2-4) within each variable, which form the basis of the analysis in Chapter 3. Section 2.2.2.12 provides a summary.

[9] The scientific debate on the methods of legal interpretation is significant since it falls into the foundations of the discipline of law. The references given in this report are merely illustrative.

2.2.2.1. Legal Form

We first map how the law defines ECs and specifically what legal form these entities are allowed to take under EU and national rules.

2.2.2.2. Technical preconditions – metering

We proceed with identifying the technical preconditions that enable the functioning of an energy community, particularly regarding metering.

2.2.2.3. Eligibility of community members

We investigate which requirements and/or limitations are imposed by the law for actors to be eligible members of an energy community.

2.2.2.4. Type of membership participation

We examine the legal criteria and conditions to enter and leave energy communities.

2.2.2.5. Community control

We ask whether the law provides a definition for the concept of 'control' applicable to energy communities, and we investigate which members have control powers and under which conditions.

2.2.2.6. Representation

We assess whether there are any administrative duties and activities that may be delegated to third parties and under which circumstances. We investigate who can be appointed as a legal representative of the energy community.

2.2.2.7. Legally enabled activities

We illustrate the range of activities in which energy communities are entitled to engage.

2.2.2.8. Asset ownership

We investigate whether there are any legally binding limits or requirements regarding the energy generation assets owned by the EC, both generally and specifically for the assets that are used for energy sharing.

2.2.2.9. Geographical limitation

We ask whether there are any spatial or geographical limitations that apply to the activities of an EC and to the location of the generation assets owned by the Community. We focus in particular on energy sharing.

2.2.2.10. Capacity limitation

We map any restrictions regarding the capacity of generation assets that an EC may own as well as capacity limits attaching to the energy shared within an EC.

2.2.2.11. Primary purpose

Lastly, we ask how law and regulation circumscribe the organisational objectives of an EC and whether any activities or organisational structures are explicitly prohibited by law.

2.2.2.12. Overview of legal research questions

Table 2-4 provides an overview of the legal research questions attached to the elements of EC governance identified above, which form the basis of the mapping in Chapter 3, both at EU and Member State level.

Table 2-4: Elements of EC governance and corresponding legal research questions

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?

2.2.3 Energy Sharing Phases

The legal mapping of energy sharing within ECs at the EU level and in the four Member States in which the U2Demo pilots are located requires the division of the sharing process into temporally sequential phases. This ensures that the legal mapping is thorough and easy for readers to navigate, and thus ultimately enhances the comparative value of this deliverable and its practical value as a reference for subsequent WPs of the project.

The starting point for the development of a phases framework able to capture the energy sharing process in ECs at the level of detail required was the steps identified by a 2023 report of the European Commission's Energy Transition Expertise Centre (ENTEC).[11] According to ENTEC, energy sharing can be envisaged as a process entailing five steps: contract, validate, calculate, register, settle (See Figure 2.2).

Figure 2.2 – Steps of the process that facilitate energy sharing according to ENTEC[11, p. 20]

We largely follow the ENTEC steps in the phases framework of this deliverable, only making some minor adjustments, primarily in nomenclature, for clarity: instead of 'validate', we refer to 'agreement registration', distinguishing it from the ENTEC 'register' phase by renaming the latter 'registering results [of energy sharing]'. The final phase is termed 'settling the financial effects' in this deliverable. This does not substantially alter the nature of the 'settle' ENTEC phase, which is also financial in focus.

In the process of researching the relevant legal provisions and in dialogue with partners, it became clear that two useful additions could be made to the way that the energy sharing process is conceptualised in this deliverable. First, a pre-contractual phase was added, which concerns the licensing and permitting obligations attaching to the installation and operation of an energy asset used for energy sharing within an EC. Secondly, we incorporated an 'operation' phase pertaining to the action of sharing itself. In doing so, we draw on a similar phase included in the USEF (Universal Smart Energy Framework) flexibility market process framework (Figure 2.3) [12] [10].

[10] USEF is an institution founded in 2014 by key players, active across the smart energy industry. Regarding the operation phase in the context of flexibility, USEF provides at 35 that: '[i]n the operation phase, the actual assets and appliances are dispatched, and the Aggregator adheres to its prognoses. System operators monitor the grid in real-time. When needed, system operators can procure additional flexibility from Aggregators to resolve unexpected congestion or to solve imbalance issues'. Section 0 provides more detail as to how this was adapted to legal research into the energy sharing process.

Figure 2.3 – The phases of the market coordination mechanism according to USEF[12, p. 34]

In the legal mapping, the operation phase divides the process into phases taking place before actual energy sharing occurs (licensing, contracting, agreement registration), and those which are concerned with the consequences of sharing (calculating results, registering results, settling the financial effects), as illustrated in Figure 2.4.

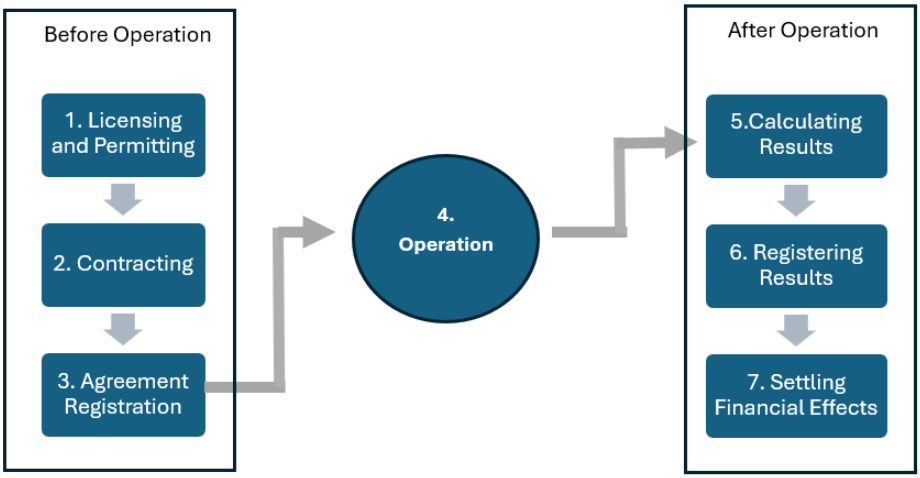

Figure 2.4 – The phases of energy sharing used for the legal mapping in this deliverable

The following subsections (2.2.3.1-2.2.3.7) outline the legal research questions within each phase, which form the basis of the analysis in Chapter 4. Section 2.2.3.8 provides a summary.

2.2.3.1. Permitting and licensing

Permitting and licensing procedures pertain to the pre-contractual phase and concern the installation and operation of an energy sharing asset used for energy sharing within energy communities. For this phase, we investigate the provisions related to the required procedure and competent authorities for the installation and operation of energy assets (which usually include environmental authorisations, grid connection permits, energy production licenses and supply licenses) as well as the registration required for the operation of energy communities.

2.2.3.2. Contracting

In the contracting phase, we examine legal provisions relevant to shaping the energy sharing agreements. Specifically, we assess the obligations incumbent upon the energy community's representative and/or the energy sharing organiser. Secondly, we explore the provisions governing the determination of sharing keys, including their definition, the existence of any

legal constraints, the subjects entitled to adjust them and the frequency with which such adjustments may be made. Finally, we investigate the regime of balance responsibility.

2.2.3.3. Agreement registration

In this phase, we map legal and regulatory provisions that specify the actors involved in the registration of the energy sharing agreements between members of an EC. We ask who the competent party is in registering the sharing agreements, with what entity or actor sharing agreements must be deposited, any verification measures that apply to the agreements before they are formally registered, as well as how and under which temporal and procedural constraints registration of sharing agreements must take place.

2.2.3.4. Operation

Departing from the assumption that energy sharing operates virtually, we examine whether ECs could operate distribution systems and the obligations of DSOs and suppliers in facilitating energy sharing. We further ask whether there are constraints at the operational level concerning the ownership of the energy asset being shared.

2.2.3.5. Calculating results

In this phase, we map legal and regulatory provisions that specify the actors involved in the calculation of the results of energy sharing. We ask who the competent party is in calculating the sharing results, and how and under which temporal and procedural constraints the calculation must take place.

2.2.3.6. Registering results

In this phase, we map legal and regulatory provisions that specify the actors involved in the registration of the results of energy sharing. We ask who the competent party is in registering the sharing results, and how and under which temporal and procedural constraints registration must take place.

2.2.3.7. Settling the financial effects

The final phase examines how any costs that may arise for EC members as a result of sharing are administered. Specifically, we ask whether it is possible for ECs to provide a separate bill for shared energy and/or other energy services to their members. If so, we also enquire into laws and regulations that specify the structure of the invoice. Finally, we also consider the impact that energy sharing may have on the network charges paid by EC members.

2.2.3.8. Overview of legal research questions

Table 2-5 provides an overview of the legal research questions attached to the individual phases of energy sharing identified above, which form the basis of the mapping of the law on energy sharing in ECs in Chapter 4, both at the EU and Member State levels.

Table 2-5: Energy sharing phases and corresponding legal research questions

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 required procedure? *Licence for registering the energy communities* - What type of licence/permit is required? - Which authority is competent? - What is the required procedure?
	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?
		  ○ When?
		  ○ How?
		- Are there any legal restrictions?

	6. Registering results	- Who is competent?
		  ○ When?
		  ○ 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?

2.2.3.9. P2P trading as sales contracts

As mentioned above in Section 2.1.1.5, there is an important nuance in the legal definition of P2P trading that is crucial to this report and the U2Demo Project from a legal and regulatory perspective. P2P trading, as defined in the RED II, concerns a 'sales contract' between market participants, including final customers. According to the scope, we argue that P2P trading is distinct from the activity of energy sharing as referred to the provision of collective self-consumption, ECs and energy sharing as per Article 15a of the EMD. Therefore, being consistent with the definition of P2P trading in the RED, it is arguable that the role of ECs in facilitating P2P trading as sales contracts between individual community members might be limited.

Understood in this narrower sense, which adheres strictly to the definition of P2P trading in EU law, a granular mapping of national law and regulation guided by detailed sub-questions, as conducted for EC governance and energy sharing, was not considered a suitable approach to P2P trading. This is due to considerable variation in the manner and depth of transposition of P2P trading across Member States. Instead, in Chapter 5, the inquiry was constructed in a more open manner. First, we ask how the definition of P2P trading in EU law has been transposed into national legislation. Then, we enquire into whether and how national law and regulation have provided a framework for P2P trading, with a particular focus on the obligations and limitations attached to entities engaging in such trading. Where relevant, we also consider the position of ECs vis-à-vis P2P trading, either as P2P traders themselves or as actors facilitating trading among their members.

3. Governance

When the RED II and the EMD introduced RECs and CECs into the EU legal order, they established governance rules defining the EC's legal form, membership, powers, permitted activities, among others. These governance rules shape ECs as institutions, regardless of how they manage and operate their activities.

Considering that those are Directives with minimum harmonisation, Member States transposed them into national law, sometimes adapting to the national context. The sections below aim to map the rules that shape the EC governance, taking into account eleven variables: (1) legal forms, (2) technical preconditions, (3) eligibility of community members, (4) type of membership participation, (5) community control, (6) representation, (7) legally enabled activities, (8) asset ownership [community and members], (9) geographical limitation, (10) capacity limitation, and (11) primary purpose (see Table 2-4).

3.1 Governance at the EU level

3.1.1 Legal forms

Renewable energy communities and citizen energy communities are both defined as 'legal entities', pursuant to Article 2(16) of the RED and Article 2(11) of the EMD, respectively. Member States have discretion to choose any form of legal entity, provided that it is entitled to exercise its rights and bear obligations in its own name (as stated by recital 71 of the RED and recital 44 of the EMD).

The broad discretion recognised to Member States in choosing the legal form is justified under the RED by the acknowledgement that 'the specific characteristics of local renewable energy communities in terms of size, ownership structure and number of projects may hinder their ability to compete on an equal footing with large-scale players, namely competitors with larger projects or portfolios' (recital 71).

In the case of CECs, the EMD refers to some non-exhaustive examples of possible legal forms, including associations, cooperatives, partnerships, non-profit organisations, and SMEs. Whatever form is opted for at the national level, what makes them 'a new type of entity' within the EU legal system is their membership structure, governance requirements and purpose (recital 46 of the EMD). All these aspects are described in the following sections. Furthermore, as clarified by recital 44, it is noteworthy that the legal provisions on CECs do not preclude the existence of 'other citizen initiatives', such as those stemming from private law agreements.

With regard to energy sharing arrangements under Article 15a, these may be based either on private contractual agreements between active customers or organised through a legal entity. In the latter scenario, as clarified by recital 23 of Directive (EU) 2024/1711, the legal entity could meet the criteria of a REC, as defined in Article 2(16) of the RED, or a CEC, as defined in Article 2(11) of the EMD. When it does so, the measures enshrined in Article 15a will be applied to the sharing members within the EC.

Table 3-1: Legal forms comparison

REC - renewable energy community Directive (EU) 2018/2001	CEC - citizen energy community Directive (EU) 2019/944	Energy sharing Directive (EU) 2024/1711
Any type of Legal entity (Article 2(16)	Any type of Legal entity (Article 2(11)	Private agreement or through a legal entity (Article 15a(2)

3.1.2 Technical preconditions - metering

Article 19 of the EMD requires Member States to ensure the deployment of smart metering systems that 'assist the active participation of customers in the electricity market'. It is defined by Article 2(23) as

> *an electronic system that is capable of measuring electricity fed into the grid or electricity consumed from the grid, providing more information than a conventional meter, and that is capable of transmitting and receiving data for information, monitoring and control purposes, using a form of electronic communication.*

As per Annexe II of the Directive, smart metering systems deployment shall be subject to an economic assessment of all the long-term costs and benefits to the market and the individual consumer, or which forms of smart metering are economically reasonable and cost-effective and which time frame is feasible for their distribution. While Article 20 lists the smart metering systems functionalities, Article 21 governs the entitlement of every final customer to request, while bearing the associated costs, the installation or, where applicable, the upgrade, under fair, reasonable and cost-effective conditions, of a smart meter. If final customers are not provided with smart meters, Member States shall ensure that they are equipped with individual 'conventional meters' that accurately measure their actual consumption, and that they can be easily read, either directly or indirectly through an online interface or through another appropriate interface, pursuant to Article 22. By definition, conventional meters, either analogue or electronic, have no capacity to both transmit and receive data (Article 2(22)).

Commission implementing Regulation (EU) 2023/1162 lays down interoperability requirements and rules for non-discriminatory and transparent procedures for access to electricity metering and consumption data by final customers and eligible parties – including RECs and CECs – in accordance with the EMD.

3.1.3 Eligibility of community members

The members or shareholders of a REC may include 'natural persons, small and medium-sized enterprises, or local authorities, including municipalities', pursuant to Article 2(16)(b) of the RED. Moreover, Article 22(1) stipulates that when household customers take part in RECs, they maintain their rights or obligations as final customers and are not subject to unjustified or discriminatory conditions or procedures that would prevent their participation in the community itself.

The EMD does not impose specific eligibility requirements for community membership; recital 44 explicitly states that 'membership of the citizen energy community should be open to all categories of entities'.

Regarding energy sharing schemes under Article 15a, the provision identifies households, SMEs and public bodies as potential participants. However, it also grants Member States the discretion to recognise the right to energy sharing to 'other categories of final customers', pursuant to Article 15a(1). In cases where participants exceed the SME (Small and Medium Enterprise) threshold, Article 15a(5) establishes two requirements relating to facility size and geographical scope: (a) the installed capacity of the generation facility associated with the energy sharing scheme must not exceed 6 MW; and (b) energy sharing must take place within a local or otherwise limited geographical area, as defined by Member States.

Table 3-2: Eligibility comparison

REC - renewable energy community Directive (EU) 2018/2001	CEC - citizen energy community Directive (EU) 2019/944	Energy sharing Directive (EU) 2024/1711
Natural persons, SMEs or local authorities, including municipalities (Article 2(16)(b))	Anyone (Recital 44)	Households, SMEs, public bodies and other categories of final customers defined by Member States (Article 15a(1))

3.1.4 Type of membership participation

Another governance-related aspect established by EU law is the criteria and conditions to enter and leave energy communities.

Participation in RECs and CECs) is 'open and voluntary' to any member that meets the eligibility requirements, as provided by Article 2(16)(a) of the RED and by Articles 2(11)(a) and 16(1)(a) of the EMD.

The meaning and implications of the 'open' nature of membership are further clarified by recital 71 of the RED, which states that the criteria governing the participation of potential new members in renewable energy projects – owned and developed by RECs – should be 'objective, transparent and non-discriminatory'.

Similarly, when it comes to energy sharing schemes under the amended EMD, Article 15a(1) provides that active customers' participation shall not be based on discriminatory criteria. However, differently from energy communities, participation in energy sharing schemes under Article 15a is not 'open'.

As regards the 'voluntariness' feature of community membership, a crucial aspect concerns the conditions under which members can leave the community. The right to exit an energy community is explicitly recognised for CECs under Article 16(1)(b) EMD, which refers to the application of Article 12 on the 'right to switch and switching-related fees'. As highlighted in recital 43, 'household customers should be allowed to participate voluntarily in community energy initiatives as well as to leave them, without losing access to the network operated by the community energy initiative or losing their rights as consumers'. Although the RED does

not contain an equivalent provision for RECs, there is no indication that members of RECs are not entitled to such a right. On the contrary, the right to leave may be considered an inherent aspect of the 'voluntary participation' requirement enshrined in both directives.

The EU legislator affords Member States a degree of discretion in defining the specific rules governing access to and withdrawal from energy communities [13]. In the absence of specific rules and conditions set by national legislators, this aspect could eventually result in burdensome contractual clauses on the withdrawal of initial investments and/or onerous conditions to leave the community.

Table 3-3: Type of membership comparison

REC - renewable energy community Directive (EU) 2018/2001	CEC - citizen energy community Directive (EU) 2019/944	Energy sharing Directive (EU) 2024/1711
Based on open and voluntary participation (Article 2(16)(a))	Based on voluntary and open participation (Article 2(11)(a))	Based on voluntary, but not open participation

3.1.5 Community control

The concept of 'control', within the governance of energy communities under EU law can be examined from both an objective perspective – namely, what is meant by control – and a subjective one – that is who can exercise it.

The Electricity Market Directive defines 'control' in Article 2(56) as:

> 'rights, contracts or other means which, either separately or in combination and having regard to the considerations of fact or law involved, confer the possibility of exercising decisive influence on an undertaking, in particular by: (a) ownership or the right to use all or part of the assets of an undertaking; (b) rights or contracts which confer decisive influence on the composition, voting or decisions of the organs of an undertaking'.

Transposing this definition to the context of energy community governance, 'control' may be understood as the capacity of eligible members to exert decisive influence both over the ownership or use of the community's assets and over the community's internal decision-making process.

The relevant provisions on this aspect are Article 2(11)(a) EMD and Article 2(16)(a) RED. Both stipulate that energy communities shall be 'effectively controlled by shareholders or members'.

In the case of CECs, such shareholders or members shall be 'natural persons, local authorities, including municipalities, or small enterprises'. This provision is complemented by recital 44, which clarifies that although membership is open to all categories of entities, the decision-making powers within a CEC 'should be limited to those members or shareholders that are not engaged in large-scale commercial activity and for which the energy sector does not constitute a primary area of economic activity'. In the case of RECs, shareholders or members in charge of controlling powers have to be 'located in the proximity of the renewable energy projects' that are owned and developed by the community (Article 2(16)(a)).

Not all types of enterprises can become members of energy communities or exercise control powers. By comparing the energy community members' eligibility requirements (as described in Section 3.1.3) with the provisions on control, it is worth noting that while large-sized enterprises are excluded from RECs membership, they can be members or CECs – albeit without exercising control over the community.

Table 3-4: Community control comparison

	REC - renewable energy community Directive (EU) 2018/2001		CEC - citizen energy community Directive (EU) 2019/944		Energy sharing Directive (EU) 2024/1711	
Householders	Eligible	Can control	Eligible	Can control	Eligible	N/A
Local authorities	Eligible	Can control	Eligible	Can control	Eligible	N/A
Small enterprises	Eligible	Can control if conditions set by Article 2(16)(a) are met	Eligible	Can control	Eligible	N/A
Medium enterprises	Eligible	As above	Eligible	Can not control	Eligible	N/A
Large enterprises	Not eligible	N/A	Eligible	Can not control	Not eligible (but open to Member States' discretion set by Article 15a(5))	N/A
Geographical limitations for controlling	Members located in the proximity of the renewable energy projects		N/A		N/A	

Finally, the 'effective control' on energy communities is intertwined with the concept of 'autonomy' [14]. While the former pertains to internal dynamics of decision-making powers, the latter is about the relationship between the energy community - as a legal entity - and its members. Recital 71 of the RED clarifies that RECs 'should be capable of remaining autonomous from individual members and other traditional market actors that participate in the community as members or shareholders, or who cooperate through other means such as investment'.

3.1.6 Representation

While active customers (as per Article 15(2)(d) of the EMD) and renewable self-consumers (as per Article 21(5) of the RED) are explicitly entitled to delegate to a third party the management of the installations required for their activities, including installation, operation, metering and maintenance (without that third party being considered an active customer), there are not equivalent provisions for CECs and RECs. Neither the Renewable Energy Directive nor the Electricity Market Directive contains specific provisions regarding the representative role that may be performed by one of the members of an energy community (or a third party).

This does not preclude energy communities from appointing a 'community manager' or a 'community representative', given that any legal entity shall be legally represented. The rights and obligations of such a representative can be defined through the constitutive agreement that founds and recognises the community as a legal entity or via the agreement addressing the contractual arrangements related to the community's activities.

Both Directives provide that energy communities can adopt any legal form under national law, as discussed in Section 3.1.1. Regardless of the form chosen by Member States when implementing the Directives at the national level, it is essential that the energy community is entitled to exercise its rights and bear obligations in its own name, in accordance with Recital 44 of the EMD and recital 71 of the RED).

As regards energy sharing under Article 15a, one of the key innovations introduced by the amended EMD is the recognition of the role played by the 'energy sharing organiser', a third party appointed by active customers.

The representative function of the energy sharing organiser – specifically, the role of communicating about the energy sharing arrangements with other relevant entities such as suppliers and network operators (Article 15a(3)(a) EMD) - is only one among several other functions that may be assigned to this party. Indeed, the energy sharing organiser may be tasked with providing support for managing and balancing behind-the-meter flexible loads, distributed renewable energy generation, and storage facilities that are part of the energy sharing agreement (Article 15a(3)(b) EMD); handling contracting and billing active customers who participate in energy sharing (Article 15a(3)(c) EMD); as well as overseeing installation and operation of the facilities involved in energy sharing (Article 15a(3)(d) EMD).

When active customers appoint an energy sharing organiser, they may enter into a separate agreement with this party, distinct from the energy sharing agreement itself, albeit related to it. This separate agreement defines the terms and conditions under which the organiser performs the specified services.

Table 3-5: Representation comparison

REC - renewable energy community Directive (EU) 2018/2001	CEC - citizen energy community Directive (EU) 2019/944	Energy sharing Directive (EU) 2024/1711
N/A	N/A	Energy sharing organiser (Article 15a(3)(a)

3.1.7 Legally enabled activities

Energy communities undertake a broad spectrum of activities that generate environmental, economic, or social benefits for their members, shareholders, and the broader local population. These activities may encompass energy generation, distribution, supply, aggregation, storage, the provision of energy-related services and energy sharing.

By definition, RECs can engage in renewable energy projects that are owned and developed by the community itself (Article 2(16)(a) RED). According to Article 22(2), they are entitled to

(a) produce, consume, store and sell renewable energy, including through renewables power purchase agreements; (b) share, within the renewable energy community, renewable energy that is produced by the production units owned by that community; and (c) access all suitable energy markets both directly or through aggregation in a non-discriminatory manner. Additionally, RECs can supply energy or provide aggregation or other commercial energy services to their members (Article 22(4)(b).

CECs may engage in generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders (Article 2(11)(c) EMD). They can also be engaged in 'energy sharing', being entitled to share generation by production units owned by the community (Article 16(2)(e). Furthermore, Member States may entitle CECs to own, establish, purchase or lease distribution networks and to autonomously manage (Article 16(2)(b) EMD). When they do so, CEC must be subjected to the same obligation imposed on DSOs (Article 16(2)(b) EMD).

For what concerns the activities enabled for energy sharing schemes under the amended EMD, they consist, by definition, of renewable energy generation or storage, offsite or onsite, by a facility owned, leased or rented, in whole or in part, by active customers (Article 2(10a).

Neither the EMD nor the RED II refers to the legally enabled activities of ECs through the definition of implicit or explicit flexibility. Nevertheless, we could argue that both REC and CEC are entitled to perform those activities, considering the description of implicit and explicit flexibility provided by USEF.[12]

Implicit flexibility could be accomplished through the optimisation of energy sharing and the performance of energy services, optimising consumption behind the meter of their members. Furthermore, explicit flexibility could also be performed by CECs and RECs, considering both can provide aggregation directly or must hold the right to access all markets, including flexibility, directly or through aggregation (see Table 3.6).

Table 3-6: Legally enabled activities comparison

Activities	REC - renewable energy community Directive (EU) 2018/2001	CEC - citizen energy community Directive (EU) 2019/944	Energy Sharing members Directive (EU) 2024/1711
Production	Yes, Article 22(2)(a) RED	Yes, Article 2(11)(c) EMD	Yes, Article 2(10a) EMD
Storage	Yes, Article 22(2)(a)	Yes, Article 2(11)(c) EMD	Yes, Article 2(10a) EMD
Sharing	Yes, Article 22(2)(b)	Yes, Article 16(2)(e) EMD	Yes, Article 2(10a) EMD
Sell	Yes, Article 22(2)(a)		Yes, Article 2(10a)
Supply	Yes, Article 22(4)(b)	Yes, Article 2(11)(c) EMD	
Aggregation	Yes, Article 22(4)(b)	Yes, Article 2(11)(c) EMD	
Energy service	Yes, Article 22(4)(b).	Yes, Article 2(11)(c) EMD	Yes, Article 15a
Grid management		Yes, Article 16(2)(e) EMD	

Access suitable markets (directly or through aggregation)	Yes, Article 22(2)(c)	Yes, Article 16(3)(a)EMD	
Implicit flexibility	Yes, based on legal interpretation	Yes, based on legal interpretation	
Explicit flexibility	Yes, based on legal interpretation	Yes, based on legal interpretation	

3.1.8 Asset ownership

The question of ownership of assets in ECs can be subdivided into two aspects: (a) ownership of assets by the individual members of an EC, and (b) ownership of assets by the EC as an entity.

Regarding ownership of assets by individual members of an EC, both the EMD with regard to CECs (in Article 16(1)(c)) and the RED with regard to RECs (in Article 22(1) and (2)(b)) stress that membership of an EC does not affect the rights and obligations of participants as individual customers. The EMD is more explicit in stating that the rights of members as 'household or active customers' should not be affected, while the RED only speaks of the rights of 'final customers' (in Article 22(1)) or 'customers' in Article 22(2)(b). However, given that Article 15(1) of the EMD obliges Member States to ensure that all final customers are entitled to act as active customers, the guarantees as to rights and obligations of individual members of ECs in both CECs and RECs can be considered equivalent.

Of particular relevance for the purposes of this analysis is the fact that individual active customers are entitled to '[consume] and [store] electricity generated within [their] premises located within confined boundaries or self-generated or shared electricity within other premises' as per the definition in Article 2(8) EMD, reinforced by Article 15(2)(b), which reiterates the right to sell self-generated electricity.

Moreover, as per Article 21(1) of the RED, all consumers are entitled to become renewables self-consumers, meaning that they should be entitled to become renewables self-consumers, which includes the right to generate renewable electricity as per Article 21(2)(a). While Article 21 of the RED speaks of 'consumers' instead of 'customers', Article 21(6)(a) obliges Member States to ensure that all final customers should be able to become renewables self-consumers. Moreover, the definition of 'active customer' as reproduced above implies that self-consumption would qualify a self-consumer as an active customer.

From the above, it follows that the individual members of both RECs and CECs, in their capacity as active customers and/or renewables self-consumers, should have the right to own electricity generation assets. They may also own energy storage facilities, as is evident from the wording of Article 15(5) EMD.

The fundamentally important question for the U2Demo project is whether active customers who are members of an EC, while generating electricity through their owned production units, could share their production with other community members through an EC. This issue is also relevant for the operation phase of energy sharing and thus also discussed in Section 4.1.4.

Article 16(3)(e) of the EMD and Article 22(2)(b) of the RED limit the right to energy sharing *within* an EC to the (renewable) energy that is produced by the production units owned by the

EC. Under this provision, for instance, an EC cannot purchase electricity through a PPA (Power Purchase Agreement) and redistribute it to community members as energy sharing. PPA often refers to long-term electricity supply agreements, usually between a power generator and final customers, which the latter could also be ECs. In this circumstance, the energy purchased through a PPA must be exchanged within the community through an energy supply agreement.

Based on the textual interpretation of Article 16(3)(e) of the EMD and Article 22(2)(b) of the RED, it is unclear whether the Member State would enable ECs to share energy from production units owned by their members, instead of the production units owned by ECs only.

The reform of the EMD, approved through Directive (EU) 2024/1711, provides in Article 2(10a)(a) that renewable energy shared between active customers should be 'generated or stored offsite or on sites between them by a facility they own, lease or rent in whole or in part' or that (under subparagraph b) this renewable energy has been 'transferred to them by another active customer for a price or free of charge'. The EMD reform tries to enhance clarity by allowing energy sharing between members based on private agreements or through a legal entity (Article 15a(2)), while Recital 23 clarifies its interpretation in combination with the provision enabling CECs and RECs of Article 16(1)(e) EMD and Article 22(4)(2) RED):

> *Energy sharing arrangements are either based on private contractual agreement between active customers or organised through a legal entity. A legal entity that incorporates the criteria of a renewable energy community as defined in Article 2, point (16), of Directive (EU) 2018/2001 or a citizen energy community as defined in Article 2, point (11), of Directive (EU) 2019/944 could share with their members electricity generated from facilities they have in full ownership.*

Despite the provision in both EMD and RED, as well as Recital 23 introduced in the EMD reform, it is still arguable whether Member States could extend the rights of sharing within the EC to electricity produced by generation units not owned by the EC, strictly speaking. This is true considering both EMD and RED are EU Directives falling under a minimum harmonisation criterion.

Table 3-7: Asset ownership comparison

REC - renewable energy community Directive (EU) 2018/2001	CEC - citizen energy community Directive (EU) 2019/944	Energy sharing Directive (EU) 2024/1711
There is no strict requirement regarding ownership, renting, or leasing of assets installed by individual community members. For sharing, Article 22(2)(b) only makes reference to energy produced by production units owned by the REC.	There is no strict requirement regarding ownership, renting, or leasing of assets installed by individual community members. For sharing, Article 16(2)(e) only makes reference to energy produced by production units owned by the CEC.	Facility shall be owned, rented, or leased in whole or in part (Article 2(10a)). Energy sharing under Article 15a could be used by ECs for sharing energy among their members regarding 'electricity generated from facilities they have in full ownership' (Recital 23)

3.1.9 Geographical limitation

EU law imposes different limitations for the different types of ECs as to the proximity of EC members to each other and the energy projects owned by the EC.

The definition of RECs in Article 2(16) of the RED stipulates that these communities must be 'effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity'. While the geographical limitation for RECs under EU law thus primarily applies to control (as discussed above in Section 3.1.5) as opposed to membership as such, this criterion could be considered to *de facto* encourage proximity between members and any asset owner by the community since such proximity results in control privileges. It is nonetheless important to note that EU law does not, as such, impose a geographical limit for membership or energy sharing in RECs. For CECs, the EMD does not provide any kind of geographical limit on membership.

The right to energy sharing introduced by Article 15a of the EMD provides that energy sharing should take place within 'the same bidding zone or a more limited geographical area, as determined by [the] Member State' (Article 15a(1)). Where a Member State allows final customers larger than SMEs to participate in energy sharing schemes under Article 15a(1), energy sharing by such larger actors must take place 'within a local or limited geographical area, as defined by the Member State concerned' under Article 15a(5)(b).

Table 3-8: Geographical limitation comparison

REC - renewable energy community Directive (EU) 2018/2001	CEC - citizen energy community Directive (EU) 2019/944	Energy sharing Directive (EU) 2024/1711
Located in proximity for control (Article 2(16))	No specific restrictions	Within the same bidding zone or a more limited geographical area (Article 15a(1)) For energy sharing participants larger than SMEs, 'local or limited geographical area' defined by the Member State (Article 15a(5)(b).

3.1.10 Capacity limitation

Neither the RED nor the EMD impose limits on the capacity of generation assets that can be owned by RECs and CECs, nor on the volume of energy that can be shared within these communities. The right to energy sharing introduced by Article 15a of the EMD only provides outright capacity limitations on final customers engaging in energy sharing that are larger than SMEs. As per Article 15a(1), it is up to Member States to decide whether to allow the participation of these larger actors in energy sharing. Where Member States allow this, a capacity limit of 6MW for 'the generation facility associated with the energy sharing scheme' applies as per Article 15a(5)(a).

For active customers participating in energy sharing schemes that are SMEs or smaller, the EMD does not stipulate specific capacity limitations. However, it provides under Article 15a(4)(c) that exemptions from supplier obligations only apply where renewable energy is shared between 'households with an installed capacity up to 10.8 kW for single households and up to 50kW for multi-apartment blocks'. For the former, Member States may choose to increase this limit to 30kw as per Article 15a(4), second subparagraph (a), while for the latter, the threshold may either be increased to 100kW or decreased to 40kW as per Article 15a(4), second subparagraph (b), though any decrease must be for 'duly justified specific circumstances due to a reduced average size of multi-apartment blocks'.

Table 3-9: Capacity limitation comparison

REC - renewable energy community Directive (EU) 2018/2001	CEC - citizen energy community Directive (EU) 2019/944	Energy sharing Directive (EU) 2024/1711
N/A	N/A	No specific capacity limitations for energy sharing participants, which are SMEs or smaller. Households with an installed capacity of up to 10,8 kW for single households and up to 50 kW for multi-apartment blocks are not required to comply with suppliers' obligations (Article 15a(4)(c)). If Member States expand the eligibility for participating in energy sharing schemes to other categories of final customers larger than SMEs, the size of the installed capacity is to be a maximum of 6 MW (Article 15a(5) EMD).

3.1.11 Primary purpose

EU law provides for both RECs and CECs that the primary purpose of an EC should not be commercial in nature. For RECs, Article 2(16)(c) states that 'the primary purpose of [a REC] is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits'. Similarly, Article 2(11) of the EMD states that a CEC 'has for its primary purpose to provide environmental, economic or social community benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits'.

As to the individual Members of ECs, the RED provides in Article 22(1) that for private undertakings that are part of a REC, such participation should 'not constitute their primary commercial or professional activity'. A specific prohibition of this kind is absent from Article 16 of the EMD, but in any case, arises from the definition of 'active customer' under Article 2(8) of the EMD, which states that the activities of production, self-consumption, selling of excess electricity or electricity sharing should not constitute the primary commercial or professional activity of the active customer.

Article 15a(2) of the EMD states that 'participation in energy sharing shall not constitute the primary commercial or professional activity of active customers engaged in energy sharing'.

Table 3-10: Primary purpose comparison

REC - renewable energy community Directive (EU) 2018/2001	CEC - citizen energy community Directive (EU) 2019/944	Energy sharing Directive (EU) 2024/1711
Provide environmental, economic, or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits (Article 2(16)(c) RED)	Provide environmental, economic or social community benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits (Article 2(11)(b))	Energy sharing must not be the primary commercial or professional activity of active customers engaged in energy sharing (Article 15a(2)

3.2 Governance in Italy

Italy transposed the EU provisions relevant for the governance of energy communities by Legislative Decree 199/21 and Legislative Decree 210/21.

It is important to consider that energy communities are also regulated by the Decree of the Ministry of the Environment and Energy Security 414/2023 (commonly referred to as 'CACER Decree') and by the Integrated Text on Distributed Self-Consumption ('*Testo Integrato Autoconsumo Diffuso*', TIAD) issued by the Regulatory Authority for Energy, Networks and Environment ('*Autorita di Regolazione per energia, Reti e Ambiente*', ARERA).

The CACER Decree and the TIAD provide a framework for accessing economic incentives and grants for all self-consumption configurations, including energy communities. A joint reading of these provisions with those included in Decreto Legislativo 199/21 and Decreto Legislativo 210/21 allows for elucidating the governance of energy communities as addressed by this report.

Specifically, RECs and CECs fall within the scope of the 'Configurations for Distributed Self-Consumption' ('*Configurazioni per l'autoconsumo diffuso*') governed by the TIAD (Article 1(1)(n)). [11] RECs are also included among the 'Configurations for Self-Consumption through

[11] The other configurations governed by TIAD include: a group of renewable energy-self consumers acting collectively ('*gruppo di autoconsumatori di energia rinnovabile che agiscono collettivamente*'); a group of active customers acting collectively ('*gruppo di clienti attivi che agiscono collettivamente*'); an individual renewable energy self-consumer 'at a distance' using a direct line ('*autoconsumatore individuale di energia rinnovabile a distanza con linea diretta*'); an individual renewable energy-self consumer 'at a distance' using the distribution network '(*autoconsumatore individuale di energia rinnovabile a distanza che utilizza la rete di distribuzione*'); an active customer 'at a distance using the distribution network ('*cliente attivo a distanza che utilizza la rete di distribuzione*').

Renewable Energy Sharing' ('*Configurazioni di autoconsumo per la condivisione dell'energia rinnovabile*', CACER), as regulated by Ministerial Decree n. 414/2023 (Article 2, letters e) to h)).[12]

The CACER Decree and the TIAD are complemented by the 'Operational rules for access to the distributed self-consumption service and the PNRR contribution' ('*Regole operative per l'accesso al servizio per l'autoconsumo diffuso e al contributo PNRR*'), which were drafted by the Energy Services Manager ('*Gestore dei Servizi Energetici*', GSE) pursuant to Article 11 of the CACER Decree and Article 11 of Annex A to TIAD.

3.2.1 Legal forms

Citizen Energy Communities ('*Comunità energetiche dei cittadini*') and Renewable Energy Communities ('*Comunità energetiche rinnovabili*') are respectively defined as 'legal entities, with or without legal personality' (Article 3(3) Decreto Legislativo 210/21) and as 'autonomous legal entities' (Article 31(1)(b) Decreto Legislativo 199/21).[13]

Considering the wide range of legal forms available under the Italian legal system for the establishment of energy communities [14] [15], it is essential the community pursue environmental, economic and social benefits (see under Section 3.2.11). This condition is expressly laid down for CECs: Article 14(6)(d) provides that, irrespectively of the legal form adopted, the constitutive agreement that founds and recognises the community as a legal entity shall identify the pursuit of environmental, economic or social benefits as its primary objective.

3.2.2 Technical preconditions - metering

Neither Decreto Legislativo 199/21 nor Decreto Legislativo 210/21 contains provisions concerning the technical preconditions for membership of an energy community. However, since the shared energy within CECs and RECs is defined – per Article 14(8)(b) of Decreto Legislativo 210/21 and Article 2(1)(q) of d. lgs 199/21 – as the minimum, in each hourly period, between the energy produced and fed into the grid and that withdrawn by the community, it follows that the community members shall be equipped with metering systems capable of recording these data. These data are then shared with the Energy Services Manager ('*Gestore*

[12] The other configurations governed by the CACER Decree include: 'Individual renewable energy self-consumption systems at a distance' ('*Sistemi di autoconsumo individuale di energia rinnovabile a distanza*') and 'collective renewable energy self-consumption systems' ('*Sistemi di autoconsumo collettivo da fonti rinnovabili*').

[13] The configurations of 'Jointly Acting Renewable Self-Consumers' (JARSCs) and 'Jointly Acting Active Customers' (JAACs) are transposed into the Italian legislation by Article 30(2) of Legislative Decree n.199/2021 and Article 3(2) of Legislative decree n.210/2021, respectively. As outlined in Section 2.1.1.6. on methodology, they fall outside the scope of this report.

[14] For instance, social cooperatives ('*cooperative sociali*') under Law n. 381/1991 and Decreto Legislativo 117/2017, third-sector foundations ('*fondazioni del terzo settore*') under Decreto Legislativo 117/2017, third-sector associations ('*associazioni del terzo settore*') under Decreto Legislativo 117/2017, social enterprises ('*imprese sociali*') under Decreto Legislativo 112/2017, cooperatives ('*società cooperative*') under the Italian Civil Code (Article 2511).

dei Servizi Energetici') for the purpose of allocating economic grants and incentives (as described under Section 4.2.5 on calculating results of energy sharing).

Additionally, pursuant to Article 9 of Decreto Legislativo 210/21, the Italian Regulatory Authority for Energy, Networks and the Environment ('*Autorità di Regolazione per Energia Reti e Ambiente*', ARERA) is tasked with defining the functional and technical requirements for smart metering systems, ensuring their interoperability – with both consumers' energy management systems and with smart grids – as well as their capacity to provide information to support end-user energy management. The deployment, replacement, and upgrading of these systems will follow a ten-year schedule from the legislative decree's entry into force, i.e. 26 December 2021. In the meantime, consumers are entitled to request the installation or upgrading of smart meters at their own expenses, under fair, reasonable and cost-effective conditions. Those consumers without smart meters are entitled to conventional meters that accurately measure actual consumption and are easily readable.

Another technical precondition, specifically for RECs, concerns the entry into operation of the renewable energy facility, which shall occur after the entry into force of Decreto Legislativo 199/21, i.e. 15 December 2021 (Article 31(2)(d). Pre-existing installations are also admissible, but only to the extent that they do not exceed 30% of the total capacity of the REC. Moreover, for the purposes of accessing the economic benefits provided under the incentive mechanisms of the CACER Decree, Decree-Law n. 19 of 28 February 2025 has established that plants which entered into operation within 150 days from the date of the entry into force of the CACER Decree (i.e. 24 January 2024) may access the incentives even prior to the formal establishment of the energy community, provided that suitable documentation is produced demonstrating that said plants were developed specifically for their inclusion in an energy community.

3.2.3 Eligibility of community members

According to Article 31(1)(b) of Decreto Legislativo 199/21[15], members or participants of a REC may include natural persons, small and medium-sized enterprises (including those partially owned by local authorities), associations, local authorities for residential building, public welfare and charitable institutions, public personal service companies, land reclamation consortia, research and training entities and bodies, religious entities, third sector entities, environmental protection associations, as well as local administrations listed in the register of public administrations prepared by the National Institute of Statistics pursuant to Article 1, paragraph 3, of Law No. 196 of December 31, 2009.

The eligibility criteria for community members have been the subject of a significant ruling by the Italian Constitutional Court[16], which declared the unconstitutionality of a provision adopted by the Abruzzo Region (within whose territory the REC of the pilot included in the U2Demo project is located). The contested provision entrusted the Region with the task of defining the eligibility criteria for participation in a REC[17], whereas such criteria were already exhaustively

[15] As amended by Law Decree n. 28 February 2025 n.19

[16] Italian Constitutional Court, 23 March 2023, n.48, <https://www.cortecostituzionale.it/actionSchedaPronuncia.do?anno=2023&numero=48> accessed 28 August 2025.

[17] Article 9(1)(b) of Regional Law of Abruzzo n. 8 of 17 May 2022, limited to the wording 'the eligibility criteria of the entities entitled to participate in RECs'.

established by national legislation, with Article 31 of Decreto Legislativo 199/21. As clarified by the Court, the Abruzzo region had encroached upon the competence to regulate this aspect, which shall instead be defined uniformly across the national territory, in order to safeguard what the Court called the 'broadest possible openness' ('*massima apertura*') of RECs, that is, the 'open and voluntary participation' requirements envisaged under EU law (see also under 3.1.4).

Regarding the membership of CECs, the legislative decree n. 210/21 does not prescribe any specific eligibility requirements, coherently with the corresponding provisions in the EMD. It provides that members or shareholders retain all rights and obligations associated with their status of household customers or active customers (Article 14(6)(b)). Moreover, when local authorities participate in CECs, Article 11(7) of Decreto Legislativo 210/21 enables them to undertake initiatives to promote the participation of vulnerable customers, within the limits of their existing budgets and without incurring additional public financial burdens. Through such participation, vulnerable customers may benefit from the environmental, economic and social advantages offered by the CEC. To support the implementation of these initiatives, the Energy Services Manager ('*Gestore dei Servizi Energetici*'), as part of its local assistance services for municipalities, shall provide dedicated information services, including informational guides and simulation tools.

3.2.4 Type of membership participation

The requirement of 'open and voluntary participation', as established by European legislation for membership in energy communities, has been transposed by the Italian legislator both for Renewable energy Communities (in Article 31(1)(d) of Decreto Legislativo 199/21) and for Citizen Energy Communities (in Articles 3(3)(a) and 14(6)(a) of Decreto Legislativo 210/21).

The right to withdraw from the community, which stems from the 'voluntariness' requirement, is explicitly recognised both for CECs and RECs.

- Regarding CECs, Article 14(6)(a) of Decreto Legislativo 210/21 refers to the applicability of Article 7 of the same legislative decree, which governs the right to switch energy supplier. The application of this latter provision to CECs entails, *mutatis mutandis*, that active customers have the right to exit the community without discrimination as to costs, charges, or timing, within the shortest possible period and, in any case, no later than three weeks from the date of receipt of the request.

- Regarding RECs, Article 32(1)(b) of Decreto Legislativo 199/21 provides that final customers participating in an energy community may withdraw from it at any time, without prejudice to any agreed payments in the event of early withdrawal for participation in the investments undertaken, which shall be, in any case, fair and proportionate.

As will be discussed in Section 4.2.2 dedicated to energy sharing (specifically, in the context of the contracting phase), members of CECs and RECs regulate their relations by means of a private law contract (as per Article 14(5) of Decreto Legislativo 210/21 and Article 32(1)(c) of Decreto Legislativo 199/21). This contract can regulate, inter alia, requirements for access by new members and the exit of existing participants, in compliance with the above-mentioned requirements of openness and voluntariness.

3.2.5 Community control

Neither d.lgs 199/21 nor d.lgs 210/21 contains a definition of 'control' corresponding to that laid down in Article 2(56) of the EMD[18]. Both decrees, however, explicitly identify the community members vested with control powers and set out the conditions under which such powers may be exercised.

- According to Article 3(3)(b) of Decreto Legislativo 210/21, CECs are 'controlled by members or partners who are natural persons, small enterprises, local authorities, including municipal administrations, research and training bodies, third sector and environmental protection bodies, religious bodies, as well as local administrations included in the list of public administrations published by the National Institute of Statistics in accordance with Article 1, paragraph 3, of Law No. 196 of 31 December 2009'.

- Regarding RECs, control powers may, in principle, be exercised by all persons and entities who qualify as eligible members of the community (as listed under Section 3.2.3), provided that they are located within the territory where the renewable energy facility is placed (Article 31(1)(d) of Decreto Legislativo 199/21).[19]

Moreover, Italian legislation highlights a link between controlling powers and the activity of energy sharing performed within energy communities:

- Article 14(8)(d) of Decreto Legislativo 210/21 requires that the electricity generation and storage facilities subject to sharing among the participants in CECs must be 'under the availability and control' of the CEC itself. The management of such facilities – including installation, operation, data processing, and maintenance – can be entrusted to a third party, including the owner of the generation facility, without prejudice, however, to the 'guidance and control powers' retained by the community.
- Similarly, for the purposes of shared energy within RECs, only the renewable energy produced by facilities that are 'under the availability and control' of the community is considered relevant (Article 31(2)(a) of Decreto Legislativo 199/21).

These two provisions are also assessed under Section 3.2.8 on 'asset ownership'.

3.2.6 Representation

The Italian legislation applicable to energy communities does not contain specific provisions regarding the requirements that shall be met by the legal representatives of energy communities, nor does it define the limits of their powers. These aspects are therefore left to

[18] Under Italian law, a definition of control is provided by Article 2359 of the Civil Code, according to which controlled companies ('*società controllate*') include (1) companies in which another company holds the majority of the voting rights exercisable at the ordinary shareholders 'assembly; (2) companies in which another company holds sufficient voting rights to exercise a dominant influence at the ordinary shareholders' assembly; (3) companies that are under the dominant influence of another company by virtue of contractual obligations with it.

[19] This 'proximity requirement' envisaged for the purposes of exercising control powers within RECs was introduced by Law Decree n. 28 February 2025 n.19.

the discretion of the community members, who regulate them through the constitutive agreement that founds and recognises the community as a legal entity or via the agreement addressing the contractual arrangements related to the community's activities. The only explicit reference to this role is found in Article 14(5) of Decreto Legislativo 210/21, which stipulates that members or shareholders of the CEC designate a responsible person or entity, which can be the community itself, one of its members or shareholders or a third party.

For the specific purposes of the 'distributed self-consumption service' and the related incentive and grant mechanisms provided by the GSE, a 'Representative Person' ('*Soggetto Referente*') shall be designated (pursuant to Article 1 (hh) of the TIAD and Sections 1.1.1, 1.2.2.1 and 1.3.1.1 of the GSE's Operational Rules). This refers to a natural or legal person entrusted with the technical and administrative management of the application to access the service. This Representative is responsible for data processing and serves as the contractual counterparty to the GSE in relation to the economic benefits granted under the service. The Representative must have been formally mandated to perform this role. This role may be undertaken by the Energy Community itself, through the person who holds legal representation in accordance with its founding agreement or statute. Alternatively, the role may be assumed by (i) an energy producer who is a member of the community, (ii) a final customer who is a member of the community, or (iii) a third-party producer of a production unit (UP) whose electricity production is relevant within the energy community configuration, provided that such party is a certified ESCO in accordance with UNI 11352. In these cases, the person who legally represents the REC – according to its statutes or founding agreement – grants the '*Soggetto Referente'* a specific, non-representative mandate. This mandate lasts one year, is automatically renewable and can be revoked at any time.

3.2.7 Legally enabled activities

With regard to the activities that may be undertaken by RECs, Article 31(2)(b) of Decreto Legislativo 199/21 emphasises the relevance of on-site instantaneous self-consumption of energy and energy sharing among community members. Only surplus energy, if any, may be stored and sold, including through renewable electricity purchase agreements, either directly or through aggregation. Additional activities are enumerated in Article 31(2)(f), which provides that RECs may also produce other forms of energy from renewable sources for use by their members. Furthermore, they may promote integrated home automation measures, implement energy efficiency measures, as well as provide electric vehicle charging services to their members. RECs may also assume the role of a retail electricity supplier and offer ancillary and flexibility services. As a precondition for engaging in these legally enabled activities, RECs shall act in accordance with the purposes established by law (see under Section 3.2.11).

In relation to CECs, Articles 3(3)(d) and 14(6)(c) of Decreto Legislativo 210/21 provide that such communities may participate in the generation, distribution, supply, consumption, aggregation, and storage of energy. Additionally, they may provide energy efficiency services, electric vehicle charging services, or other energy-related services to their members or shareholders. CECs are also entitled to manage the distribution network, subject to prior authorisation by the Ministry of Environment and Energy Security (see Section 4.2.4 on Operation).

3.2.8 Asset ownership

The provisions relevant to identifying the ownership regime of energy community assets in Italy are:

- For CECs, Article 14(8)(d) of d. lgs n. 210/21, which stipulates that generation and storage facilities for electricity shared among participants shall be 'under the availability and control' of the CEC itself;
- For RECs, Article 31(2)(a) of Decreto Legislativo 199/21, which establishes that, for the purposes of shared energy, only the renewable energy produced by facilities that are 'under the availability and control' of the community is considered relevant.

For the purposes of accessing the 'distributed self-consumption service' and the related economic grants and incentives for energy communities (as described under Section 4.2.5 on calculating results of energy sharing), the meaning of the expression 'availability' ('*disponibilità'*) is clarified by the Operational Rules issued by the Energy Services Manager (GSE). In Appendix A of these rules, the GSE specifies that 'full availability of an area' refers to ownership rights or other right of use, such as surface rights ('*diritto di superficie*') or usufruct ('*usufrutto'*), or contractual titles such as loan for use ('*comodato d'uso*') or rent ('*locazione'*). An easement contract ('*contratto di servitù'*) does not qualify as a valid title.

3.2.9 Geographical limitation

Regarding geographical limitations applicable to the activities which energy communities are entitled to engage in, they can share energy within the same electricity market zone, as provided by Article 14(8)(a) legislative decree n. 210/21 (for CECs) and by Article 2(q) and 31(2)(c) of legislative decree n. 199/21 (for RECs).

Italian legislation also provides a 'proximity requirement' that is applicable to community members for the purposes of exercising control powers, as described under Section 3.2.5.

Additionally, for the purpose of accessing economic grants and incentives (as described under Section 4.2.5 on calculating results of energy sharing), the geographical perimeter of RECs, as identified by the Italian lawmaker, corresponds to that of the 'primary electricity substation' ('*cabina elettrica primaria*'), as per Article 8(1)(b) and Article 31(2)(c) of d lgs. 199/21. Article 3(2)(d) of the 'CACER Decree' states, accordingly, that the production plants and withdrawal points that are part of the energy community configuration must be connected to the distribution network through connection points that fall within the area served by the same primary substation. A 'primary electricity substation' is defined by the TIAD as an electrical station supplied at high or extra high voltage, equipped with at least one high/medium-voltage or extra-high/medium-voltage transformer dedicated to the distribution network or the connection of a distributed 'distributed self-consumption system' (Article 1(1)(g))[20].

[20] In compliance with Article 10(6)(b) TIAD, the GSE, in collaboration with network operators, developed an interactive map of the areas served by primary substations, as well as the qualified distributed self-consumption configurations, <https://www.gse.it/servizi-per-te/autoconsumo/mappa-interattiva-delle-cabine-primarie> accessed 28 August 2025.

3.2.10 Capacity limitation

The limitations established by the Italian legislative and regulatory framework regarding the generation capacity of renewable energy communities' assets are relevant for access to economic grants and incentives (as described under Section 4.2.5 on calculating results of energy sharing), which vary on the basis of the size and capacity of the renewable power plant.

In particular, Article 5(4) of dec. Lgs. 199/21 provides that for plants with a power equal to or less than 1 MW that are part of RECs, it is possible to access a direct incentive. This incentive rewards, through a specific tariff – which can also be graduated on the basis of the power of the plants – the energy that is self-consumed instantly. Moreover, pursuant to Article 1(2) of the CACER Decree, incentives are capped at a total capacity of 5 GW.

It is noteworthy that neither Italian legislation nor regulation imposes a limitation on the volume of energy that can be shared within energy communities.

3.2.11 Primary purpose

For RECs, the primary objective is to provide environmental, economic or social benefits at the community level to its members or to the local areas in which the community operates and not to make financial profits (Article 31(1)(a) Decreto Legislativo 199/21). Moreover, as regards private undertakings, their participation in RECs shall not constitute their main commercial or industrial activity (letter b) of the same Article.

For CECs, the primary purpose is to provide its members or partners or the territory in which it operates with environmental, economic or social benefits at the community level rather than pursuing financial profits (Article 3(3)(c) and Article 14(6)(d) Decreto Legislativo 210/21).

3.3 Governance in Portugal

Portugal transposed the main EU provisions relevant for the governance of ECs by Law Decree n. 15/2022, of 14 January. Like EU law, Portuguese legislation transposed the provisions of CECs ('*Comunidade de cidadãos para a energia (CCE)*') and RECs ('*Comunidades de Energia Renovável (CER)'*) in its section II, more precisely between Articles 189 and 191. There are other infra-legislative acts (referred to as regulations) that regulate in more detail the rules of the ECs.

A key difference in Portugal's legal order is that the Portuguese lawmaker decided to extend to RECs and CECs the entitlement to operate collective self-consumption ('*autoconsumo coletivo' (ACC))* (Article 86(3) of Decree n. 15/2022) and energy sharing ('*partilha de energia*') (Article 87 of Decree n. 15/2022). This is possible because ECs can take over, or delegate to a third party, the roles and responsibilities associated with the legal representation of collective self-consumption, called EGAC ('*entidade gestora de autoconsumo coletivo*') (also, Article 86(3) of Decree n. 15/2022). By doing so, RECs and CECs in Portugal have the right to share energy produced by their owned generation units and also other UPACs *('Unidade de Produção para Autoconsumo')* integrated into collective self-consumption, as it will be further developed below (3.3.7).

3.3.1 Legal forms

CECs and RECs must be constituted as legal entities (‘*pessoas coletivas’*), according to Articles 189(1) and 190(1) of Decree-Law n. 15/2022.

In Portugal, legal entities are social organisations with legal personality, which could be of three categories: legal entities of public law (‘*pessoas coletivas de direito público*’), legal entities for public utility (‘*pessoas coletivas de direito público’*), and legal entities of private law (‘*pessoas coletivas de direito público’*). The first two categories of legal entities require an administrative act to be constituted and are incompatible with governance rules of energy communities (e.g., membership and control). The latter, ‘*pessoas coletivas de direito público’*), are those suitable for ECs.

Legal entities of private law could be of four types:[21]

- ‘*Associações*’ (non-profit organisations that may be cultural, social or other in nature);
- ‘*Cooperativas*’ (general partnerships, limited partnerships, public limited companies or limited partnerships);
- ‘*Sociedade civil ou comercial’* (types of legal entities referred to as collective, limited liability, anonymous, and limited partnerships);
- ‘Foundações’ (legal entities that manage a set of assets dedicated to the pursuit of a specific long-term and socially relevant goal, whether religious, moral, cultural or charitable).

Foundations fall into a public-private realm as they need an administrative act for their constitution. Therefore, the legal form of ECs falls into the first three categories: associations, cooperatives, or civil and commercial companies.

3.3.2 Technical preconditions

The basic technical preconditions to become a member of energy communities are to have access to smart meters. According to Article 282(1) of Decree-Law n. 15/2022, the Order No. 231/2013, of 22 July, already considered the installation of smart meters economically viable. As a consequence, the Government approved the schedule for the installation of smart meters and their integration into smart grid infrastructure, ensuring 100% coverage of end customers by 2024 (Despacho 14062/2024, of 4 January).

For those ECs with members engaged in ‘*autoconsumo coletivo’* and sharing their self-generated electricity, there is a need for a smart meter that is bidirectional – ‘*contadores bidirecionais’*. According to the *Regulamento* 815/2023 issued by ERSE, if the smart meter is not suitable for the self-consumption regime, the DSO must replace or adapt it at no cost to the customer. The meter will only be adapted after the customer has registered their self-consumption on the DGEG Portal. Then, DSO has four months to install it without cost.

[21] Código Civil, artigos 33.º e 34.º; 157.º–201.º-A; 980.º; 2033.º, Código das Sociedades Comerciais, artigo 5.º, and Código Cooperativo, artigo 16.º. For further details about how to constitute each of these entities, see [16].

If the '*Unidade de Produção para Autoconsumo'* (UPAC) connected to the '*Instalação Elétrica de Utilização*' has an installed capacity of 4W, then it is necessary to have a '*contador totalizador'*. In this case, the costs for the meter must be supported by the active customer or the RECs.

3.3.3 Eligibility of community members

Portuguese law transposed the provisions on eligibility to become community members by copying the same wording for the REC and CEC provisions into national law. Therefore, community members could be 'natural or legal persons, whether public or private, including, in particular, small and medium-sized enterprises or local authorities' (Articles 189(1) and 191(1) of Decree-Law n. 15/2022).

Consequently, the Portuguese law does not restrict the eligibility to become members of REC, specifically, only to natural persons, SMEs or local authorities, as EU law does under Article 22(1) of RED II (see 3.1.3). Consequently, the eligibility to join RECs and CECs is the same in Portugal for RECs and CECs.

3.3.4 Type of membership participation

The requirement that ECs must have an 'open and voluntary participation' of their members, as established by EU law, has been transposed by the Portuguese legislator both for RECs (Article 189(1) of Decree-Law n. 15/2022) and for CECs (Article 191(1) of Decree-Law n. 15/2022) using the exact wording: '*mediante adesão aberta e voluntário dos seus members, socios or acionistas*'.

Concerning the entrance of members to REC and CECs, Article 189(5) of Decree-Law n. 15/2022 establishes that consumer, while accessing RECs and CECs, cannot be 'subject to conditions or procedures that are unjustified or discriminatory and prevent their participation'. This is reinforced by provisions on consumer protection, where the Portuguese law must ensure consumers' access to activities entitled to active customers, including the right to become members of the ECs (Article 180(3) and Article 187(2)(c) Decree-Law n. 15/2022).

Concerning the exit of members from REC and CECs, instead, Article 189(6) of Decree-Law n. 15/2022 determines that CECs and RECs 'must allow any of their participants to leave, provided that they fulfil the obligations to which they are bound'. This provision is then complemented by Article 187(2)(d) of the same Decree-law, which concerns consumer protection (i.e., a right enshrined to householders only), establishing that 'the option to leave a community is free and does not entail any costs arising from the change'.

About the right to enter and leave energy communities, particular attention must be taken when ECs operate collective self-consumption (in Portuguese law, ACC), being registered as an EGAC or delegating this role to a third party. In this particular case, Article 86(1) of Decree-Law n. 15/2022 establishes that 'active customers participating in an ACC must set a private regulation which must include, among others, the requirements for access by new members and the exit of existing participants'. This internal regulation must be communicated to the DGEG, an executive body within the Portuguese government, within a maximum of three months after the '*Unidade de Produção para Autoconsumo'* (UPAC) becomes operational.

This report further develops this topic in the section dedicated to energy sharing, specifically in the context of the contracting phase (section 4.3.2).

3.3.5 Community control

While EU law has rules about which members or shareholders could effectively control the ECs (Article 2(11)(a) EMD and Article 2(16)(a) RED) (see 3.1.5), Portugal did not transpose these provisions into national law (from Article 189 to Article 191 of Decree-Law n. 15/2022). Consequently, the ECs could then be controlled by any member of the community. Portuguese lawmaking opted to leave the subject of the control of ECs to be ruled by the general law applied to legal entities, depending on the chosen legal form, namely the Civil Code for associations, the Commercial Code for civil and commercial companies, and the Cooperative Code for cooperatives (see 3.3.1).

3.3.6 Representation

When referring to the representation of ECs, it is important to differentiate between representing the EC as a legal entity and representing ECs towards competent authorities regarding certain activities conducted within the electricity market.

The Portuguese law applicable to ECs does not contain specific provisions regarding the requirements for a person or a legal entity to be a legal representative of ECs as a legal entity, which is commonly required for the legal entity registration. These aspects are ruled by general law applied to legal entities, depending on the chosen legal form, namely the Civil Code for associations, the Commercial Code for civil and commercial companies, and the Cooperative Code for cooperatives (see 3.3.1).

When ECs engage in collective self-consumption/energy sharing (ACC), they must designate an EGAC (‘*entidade de gestão de autoconsumo coletivo’*), which is responsible for managing the operational aspects of collective self-consumption/energy sharing. An EC could be nominated as an EGAC or delegated to a third party (Article 86(3) of Decree-Law n. 15/2022). EGACs could be ‘a person, whether natural or legal, who may or may not be a self-consumer, designated by collective self-consumers to perform acts on their behalf’ (Article 3(gg) of Decree-Law n. 15/2022).

There is a long list of roles and responsibilities that the EGACs must take over while managing an ACC. These provisions are generally regulated in Articles 86(2), 87(1) and 81(2) cc), as well as the ERSE Self-consumption Regulation n. 815/2023. The list below provides a synthesis of the roles and responsibilities of EGACs [17].

- Represent all active customers in that ACC (those generating and self-consuming, and also only consuming)
- Define the sharing coefficients to be applied;
- Distribute costs for each IU;
- Distribute benefits for each IU (e.g., revenue from the sale of surpluses);
- Manage self-consumers with regard to ACC member entries and exits;
- Access the data of each self-consumer (energy production and consumption);

- Enter into a network usage contract with the DSO, if RESP is used;
- Pay the fees and tariffs due (e.g., fees for administrative procedures related to self-consumption activity (namely related to licensing/prior control), network access tariffs, etc.);
- Liaise with the various entities involved in the process (DGEG, DSO and supervisory bodies);
- Other activities (if decided in the ACC's internal regulations, which should also have other associated services, such as consulting/internal network management (if applicable), energy rationalisation and monitoring of energy consumption in participating UIs, electric mobility, etc.).

This report furthers develops the topics on roles and responsibilities of EGAC in the chapter concerning energy sharing, which is relevant for the description of many phases.

3.3.7 Legally enabled activities

Portuguese Law distinguished the legally enabled activities that could be conducted by CECs and RECs in Decree-Law n. 15/2022. Considering the relevance of the subject, this report translates the provision into later comments on it.

First, Article 189(2) lists the enable activities of RECs.

> a) Produce, consume, store, purchase and sell renewable energy with its members or third parties;
> b) Share ('*partilhar*') and trade ('*comercializar*') among its members the renewable energy produced by UPAC at its service, in compliance with the other requirements set out in this article, without prejudice to the members of the CER maintaining their rights and obligations as consumers;
> c) Access all energy markets, including system services, both directly and through aggregation.

Second, Article 191(1)(b) and (2)(a)(b) lists the enable activities of CECs. It is important to highlight that Article 191(2) states that the provision applied to RECs is equally applicable to CECs. Thus, one could claim that all activities entitled to RECs can also be performed by CECs. Notwithstanding, Article 191(1)(b) repeats some of the activities already listed in Article 189(2).

> Article 191(1):
> b) It may participate in production activities, including renewable energy, distribution, trading ('*comercialização*'), consumption, aggregation, energy storage, energy efficiency services, or electric vehicle charging services, or provide other energy services to its members or shareholders.
>
> Article 191(2) [activities that are exclusive to be performed by CECs]:
> a) They may own, establish, purchase or rent closed distribution systems and manage it, under the terms defined in this decree-law;
> b) They may produce, distribute, supply ('*comercializar*'), consume, aggregate and store energy regardless of whether the primary source is renewable or non-renewable.

There are some interpretations of those provisions that require emphasis.

The first comment is dedicated to Article 189(2)(b) concerning the entitlement to '*partilhar e comercializar entre os seus membros*', which could be translated as sharing and P2P trading. Although Portuguese lawmakers have not used the precise terminology of '*comercialização entre pares*', as adopted by Article 2(o) of Decree-Law n. 15/2022 to transpose the definition of P2P trading, the wording of Article 189(2) – '*comercializar entre pares*' – leads to the conclusion that ECs can perform both activities of energy sharing and P2P trading of the renewable energy produced by UPAC at its service (for P2P trading, see section 5.3). It is also worth noticing that Article 86(3) reinforced that ECs could manage collective self-consumption; therefore, ECs could share the production of the UPAC at the service of ECs, including those where ownership or possession falls into the hands of their members (see section 3.3.8).

The second comment is about the wording '*comercializar*' as listed in Article 191(2)(b). In Portuguese law, '*comercializar*' is the word use to refer to the supply of energy. Therefore, ECs could become energy suppliers – '*comercilaizador*' – insofar as they comply with the legal conditions to be so.

The third comment refers to Article 191(2)(b), in which the Decree-Law n. 15/2022 relates to energy efficiency services as an activity exclusively conducted by CECs only. This seems to be an unjustified restriction, considering that EU law enables both RECs and CECs to conduct energy services activities.

3.3.8 Asset ownership

As mentioned in the prior section, Portuguese law allows ECs to 'share ('*partilhar*') and trade ('*comercializar*') among its members the renewable energy produced by UPAC at its service (Article 189(2)(b) of Decree-Law n. 15/2022).

It is very important to underline that ECs can share 'renewable energy produced by UPAC at its service' – '*ao seu serviço*'. This provision needs to be read together with Article 81(2) of Decree-Law n. 15/2022, which establishes the prior control of UPAC, where certificates are issued by the DGEG. UPACs at ECs' service are those whose certificates are issued to them (see also section 4.3.1). Therefore, one can conclude that Portuguese law expands the possibility of ECs to share electricity that goes beyond the production units owned by the EC, which is the minimum standard set in EU law (see 3.1.7).

According to Article 2(vvv) of Decree-Law n. 15/2022, UPAC is:

> *'one or more production units whose primary source is renewable energy, including or excluding energy storage facilities associated with one or more IU, intended primarily to meet its own electricity needs, which are installed in that(those) IU(s) and/or in the vicinity of the IU(s) they supply, and* ***may be owned and/or managed by third parties'****.*

Therefore, the legal definition of UPACs reinforces the interpretation that UPACs could be owned and/or managed by third parties.

3.3.9 Geographical limitation

Like EU law, the Portuguese law established geographical limitations for the REC. Article 189 (1)(a) of Decree-Law n. 15/2022 established that members or participants of ECs must be in the vicinity of renewable energy projects.

When ECs are operating in energy sharing (ACC), the distance between UPACs and UIs is subjected to a geographical limitation. According to Article 83(2) of Decree-Law No. 15/2022, as amended by Decree-Law No. 99/2024, the proximity varies according to the following:

a) In the case of UPACs connected to low voltage (LV) electricity distribution networks, the IU and the UPAC could be no more than 2 km apart geographically or are connected to the same transformer station; or,

b) In the case of UPACs connected to the RND (National Distribution Network, at medium voltage (MV) or high voltage (HV)) or to the RNT (National Transmission Network, at extra-high voltage (EHV), UPACs and UI should be connected to the same substations.

c) In the case of UPACs connected to the RND or RNT, not connected to the same substation, the distance between UPACs and UIs cannot exceed 4 km in the case of MV connections, 10 km in HV connections and 20 km in VHV connections.

In addition to the situations indicated, the proximity relationship may also be assessed on a case-by-case basis by the DGEG (Directorate-General for Energy and Geology), taking into account relevant technical elements and energy optimisation criteria, within the scope of the provision of essential public services or the development of municipal or regional territorial strategies.

3.3.10 Capacity limitation

So far, Portuguese law does not limit the capacity generation of generation units operated by the ECs or UPACs subjected to collective self-consumption. However, depending on the installed capacity, the generation unit or the UPAC must comply with different rules concerning licensing and registration, as further developed in the sections on energy sharing, 4.3.1 and 4.3.3.

3.3.11 Primary purpose

Article 189(1)(c) of Decree-Law n. 15/2022 establishes that RECs' primary objective is to provide its members or the communities where it operates with environmental, economic and social benefits rather than financial profits. The same provision applies to CECs (Article 191(2) of Decree-Law n. 15/2022).

3.4 Governance in Belgium (Flanders)

As discussed in Section 2.2.1.2, the Flemish legislative and regulatory framework for EC governance is mainly contained in the Energiedecreet of 8 May 2009 (as amended), which forms the principal basis of the mapping below. Provisions of the Protocol are also considered where these provide more necessary detail regarding the legal provisions.

3.4.1 Legal forms

A CEC (‘*energiegemeenschap van burgers*’) is defined in Article 1.1.3, 40° /1/1 of the Energiedecreet as a legal entity. This is reinforced in Article 4.8.1, §1, subsection 2. A REC (‘*hernieuwbare-energiegemeenschap*’) is defined in Article 1.1.3, 65° /1 as a legal entity. This is confirmed in Article 4.8.2, §1. No specific type of legal entity seems to be prescribed by the law for either CECs or RECs, hence, the decree makes reference to both partners (‘*vennoten’*) and members (‘*leden*’) of an EC to account for different means of establishment as a legal entity.

3.4.2 Technical preconditions - metering

There are no legal preconditions, per se, as to the metering requirements for membership in a CEC or REC. However, if necessary for the purposes of carrying out a range of activities which ECs are entitled to engage in, among them energy sharing[22], Article 4.8.4., §2 of the Energiedecreet stipulates that the partners or members of the EC ‘shall have a meter that measures separately the energy purchased and the energy injected into the distribution network, and whose measured values shall be recorded and processed at the allocation at least every imbalance settlement period’.

The Protocol specifies in Section 5.4 that for participants in energy sharing, an Automated Meter Reading (AMR) meter or a communicating digital meter must be present where metering regime 3, meaning quarter-hourly data in allocation, is activated.

The Energiedecreet specifies that members of an EC are ‘in their capacity as a customer [or consumers of thermal energy in the case of a CEC] each connected to an electricity distribution network, the local transmission network of electricity, a closed distribution network of electricity, or a heat or cold network’ as per Article 4.8.1., §1, subsection 3 (for CECs) and Article 4.8.2., §1, subsection 3 (for RECs).

The Protocol specifies in Section 5.4 that for energy sharing, participants must additionally have a contract with a commercial energy supplier.

3.4.3 Eligibility of community members

Article 4.8.1. of the Energiedecreet does not specify any limits on the kind of actors that can become partners or members of a CEC. However, constraints as to control (Section 3.4.5) and primary purpose (Section 3.4.11) apply. Additionally, Article 4.8.1., § 1, subsection 3 provides that the partners or members of a CEC, ‘in their capacity as customers or

[22] The same provision also applies to some of the other activities of CECs and RECs enumerated in Article 4.8.4., § 1, specifically those of energy production, self-consumption, storage, flexibility services, energy selling, and electric vehicle charging services.

consumers of thermal energy, are each connected to an electricity distribution network, the local transmission network of electricity, a closed distribution network of electricity or a heat or cooling network' (also discussed as a technical precondition in Section 3.4.2 above).

Article 4.8.2., §1, susbsection 3 of the Energiedecreet limits the participation in RECs to 'natural persons, local authorities or small and medium-sized enterprises'. Additionally, constraints as to control (Section 3.4.5), geographic proximity (Section 3.4.9) and primary purpose (Section 3.4.11) apply. Article 4.8.2., § 1, susbsection 3 provides that the partners or members of a REC, 'are in their capacity as a customer each connected to an electricity distribution network, the local transmission network of electricity, a closed distribution network of electricity, or a heat or cold network' (also discussed as a technical precondition in Section 3.4.2 above).

3.4.4 Type of membership participation

Flemish law faithfully transposes the EU law requirement that participation in CECs and RECs be open and voluntary in Article 4.8.1., §1, subsection 2 and Article 4.8.2., §1 of the Energiedecreet, respectively.

3.4.5 Community control

For CECs, Art 4.8.1., § 1, subsection 1 of the Energiedecreet provides a specific definition of control as

> rights, agreements, or other means that, individually or collectively, taking into account all factual or legal circumstances, allow the exercise of a decisive influence on the activities of an undertaking, namely:
>
> 1° ownership or usage rights over all or parts of an undertaking's assets;
> 2° rights or agreements that provide a decisive influence on the composition, voting behaviour, or decisions of the bodies of an undertaking.

Article 4.8.1., § 1, subsection 4 further specifies control of a CEC is limited to 'natural persons, local authorities, or small enterprises that are not involved in large-scale commercial activities and for whom the energy sector is not their primary economic activity'. As per Article 4.8.1., § 2, subsection 2, the statute of the CEC should define the more detailed rules regarding control.

Article 4.8.2., § 1, subsection 3 of the Energiedecreet provides that control of a REC is limited to the partners or members of the community, that is 'natural persons, local authorities or small and medium-sized enterprises whose participation in the energy community is not the main commercial or professional activity and which are located in proximity to the renewable energy projects of the renewable energy community' (see also Section 3.4.3 on eligibility of community members and Section 3.4.9. on geographical limitations). The same provision further specifies that '*[t]he renewable energy community is autonomous with regard to the individual members and partners or other market participants who participate in it through other means, such as investments*'. Article 4.8.2., § 2, subsection 2 mirrors Article 4.8.1., § 2, subsection 2 stating that the REC should determine in its bylaws the specific rules regarding control, as well as the autonomy from members participating in the REC through other means.

3.4.6 Representation

Article 4.8.4., § 1, subsection 3 of the Energiedecreet specifies that the 'management of the installations connected to the electricity distribution network, the local electricity transmission network, a closed electricity distribution network or a heat or cooling network', where necessary in order to facilitate the activities that RECs and CECs can carry out (see section 3.4.7), may be delegated by these ECs to a third party, 'including with regard to installation, operation, data processing and maintenance where the third party is not considered a citizen energy community or renewable energy community'. This mirrors the delegation provision for active customers under Article 4.2.2., § 3 of the Energiedecreet.

3.4.7 Legally enabled activities

Article 4.8.4. of the Energiedecreet is concerned with the activities that may be undertaken by energy communities. As per § 1, the activities that CECs can carry out are:

> 1° production of energy from an installation, directly connected or indirectly connected through the connection of partners or members of the energy community of citizens to an electricity distribution network, the local transport network of electricity, a closed distribution network of electricity or a heat or cold network, where the energy community of citizens is the owner or has the user rights of the production installation;
> 2° self-consumption of the energy mentioned in point 1°;
> 3° energy storage;
> 4° offering or participating in energy services;
> 5° acting as a service provider of flexibility or participant in flexibility or aggregation;
> 6° selling the energy mentioned in point 1°, including with a power purchase agreement;
> 7° offering electric vehicle charging services;
> 8° energy sharing, between partners or members, of the energy mentioned in point 1°

Subsection 2 provides at all of these activities may also be carried out by RECs provided that 'the energy referred to in subsection 1° relates to green electricity from an installation directly or indirectly connected via the connection of partners or members of the renewable energy community to an electricity distribution network, the local electricity transmission network, a closed distribution network, or relates to renewable thermal energy from an installation connected via a heat or cold network'.

3.4.8 Asset ownership

Article 4.8.2., § 1, subsection 7 of the Energiedecreet states that '*[a] renewable energy community holds the property rights of the facilities it uses to conduct its operations*'. Article 4.8.4., § 1, subsection 2 specifies that a REC '*is always the owner of the production facilities*'.

As discussed in Section 3.4.7 above, Article 4.8.4., § 1 of the Energiedecreet states that a CEC must be the owner or have the user rights of the production installations.

3.4.9 Geographical limitation

As per Article 4.8.2, § 1, subsection 4 of the Energiedecreet, RECs shall 'limit participation on the basis of technical or geographical proximity, taking into account the function of their objectives or activities'. The Flemish Government may establish criteria to define the concept of technical or geographical proximity, but this option has not been exercised by the Flemish government at the time of writing. Article 3.3.2., 5° of the Energiedecreet states that a REC must provide the regulator with information as to how it has given substance to this concept within 30 days of its establishment. It should be noted that technical or geographical proximities should be understood as alternatives. This follows from the biennial reports of VREG, which must, as per Article 3.3.3., 4° of the Energiedecreet, include reporting on how RECs have fulfilled the geographical or technical proximity requirement. The latest report, of 2024, provides that:

> *'The findings in our previous reports remain largely unchanged. 18% indicate that they work on the basis of technical proximity, and 82% on the basis of geographical proximity. Geographical proximity can be interpreted very broadly or very narrowly: ranging from the whole of Belgium (which is actually not possible, as the geographical scope of [a REC] can only extend to the territory of the entire Flemish Region) to the buildings of a school community and its employees'.*[18, p. 10]

No such geographical or technical limitation applies to CECs.

3.4.10 Capacity limitation

There is no limit on the capacity of assets owned and operated by RECs and CECs in Flanders. However, provisions as to the primary purpose of RECs and CECs as outlined in Section 3.4.11 below, and the provisions and exemptions for supply and production licences, as well as for grid connection, as outlined in Section 4.4.1, apply.

3.4.11 Primary purpose

The Energiedecreet states with regard to both CECs and RECs, in Article 4.8.1., § 1, subsection 2, and Article 4.8.2., § 1, subsection 1, respectively, that the main objective of an EC is 'providing environmental, economic or social benefits for its associates, members or the environment in which it operates, which has no profit motive or a profit motive subordinate to its main objective'.

3.5 Governance in the Netherlands

In the Netherlands the CEC and the REC are transposed in the Energiewet[23] (Energy Act) covering rules on electricity and gas in the Wet Collectieve Warmte[24] (Heat Act) containing rules on collective heating systems and district heating. The Energy Act was adopted in December 2024 implementing the clean energy package and the Heat Act in has been adopted by parlement in July 2025 and waits approval from the Senate. The legislator decided to opt for one definition; the energy community ('*energiegemeenschap*') in the Energy Act covers both the REC and the CEC. The REC definition has been transposed in the Heat Act as the heat community ('*warmtegemeenschap*').
The EMD reform 2024/ 1711 has not been implemented yet. A first proposal for implementation has been published for public consultation on the 8th of November 2024 (Proposal EMD reform)[25]. This text will be used for the analysis.

3.5.1 Legal forms

The energy community is defined in Article 1.1 of the Energy Act and does not require a specific type of legal entity. The law refers to '*a legal entity' and to 'members, partners and shareholders*'. The energy community can choose a legal entity.

The heat community defined in the Heat Act does neither prescribe a 'legal person or partnership without legal personality' ('*rechtspersoon of personenvennootschap*'). Also, here the definition speaks of members, partners and shareholders.

Energy sharing under the currently adopted Energy Act, allows for sharing within the energy community. Meaning that energy sharing can only take place under a legal entity and under the condition that all community members/ partners/ shareholders have an agreement with the same energy supplier.

In the EMD reform that has been consulted the Articles on energy sharing will be adjusted. Not only energy communities, but also active customers can share. An energy sharing agreement is required as the basis for sharing, Article 2.30 § 3 proposal EMD reform. In the new energy sharing model energy can be shared in a community or between active customers, independently of the supplier that has been contracted.

3.5.2 Technical preconditions (smart metering)

There are no preconditions on smart metering for energy community members, partners or shareholders. However, a smart meter is necessary for carrying out a range of activities, such as energy sharing. The Energy Act requires that '*each active consumer or member within the energy community is equipped with a metering device whose communication functionality is*

[23] Wet van 11 december 2024, houdende regels over energiemarkten en energiesystemen (Energiewet), Staatsblad 2025, 12
[24] Regels omtrent productie, transport en levering van warmte (Wet collectieve warmte), Kmst II 36576, eindtekst 3 juli 2025
[25] Wijziging van de Energiewet ter implementatie van het EU wetgevingspakket inzake het verbeteren van de opzet van de elektriciteitsmarkt van de Unie en de verbetering van de bescherming van de Unie tegen marktmanipulatie op de groothandelsmarkt voor energie, internetconsultatie d.d. 8 november 2024

utilized […])'. A metering device is defined as: 'an instrument or a combination of instruments with a metering function that measures at least the injection, withdrawal, or consumption of electricity or gas, excluding auxiliary devices that support the metering function and are part of a connection' (Article 1.1 Energy Act). The communication functionality refers to the possibility that the meter has a remote reading capability.

3.5.3 Eligibility of community members

The Energy Act (Energiewet) does not limit the kind of actor that can become a partner. However, it does include limitations on the parties that can have control within the energy community, Article. 2.4 § 1 subsection c) Energy Act, see also Section 3.5.5.

In case that ECs develop renewable energy projects, then there are limitations to who can become member, shareholder or partner. Participation is limited to 'natural persons, municipalities, water boards, provinces, inter-municipal cooperations, or micro, small, or medium-sized enterprises', Article 2.4 § 2 subsection a) Energy Act.

The Heat Act requires that the bylaws or contract (in case of a partnership) of the energy community contain that exclusively natural persons, micro-enterprises, small enterprises, medium-sized enterprises, or municipalities, water boards, provinces, or inter-municipal cooperation can be members, shareholders or partners in the heat community, Article 2.3 § 4 subsection a Heat Act.

Under the adopted Energiewet, energy sharing can only take place in an energy community and all members need to have an agreement with the same supplier, Article 2.30 § 1 subsection a) and b) Energy Act.

In the new proposal for implementing the EMD reform, both active customers and energy communities have the right to share energy, Article 2.30 § 1 Proposal EMD reform. The members no longer need to have a supplier agreement with the same supplier.

All types of parties can share electricity, also larger companies. However, there are two main restrictions: '1. the installed capacity of the production installation that generates electricity for the purpose of energy sharing does not exceed 6 MW; and 2. the energy sharing takes place within a local or limited geographical area designated by or pursuant to a general administrative order' (Article 2.30 § 2 subsection a) and b)).

Also, if the participants in energy sharing as individuals have an installed capacity over 17 kW or as an apartment block or energy community over 55 kW, additional requirements are in place. Then, many of the requirements that apply to supply also apply to sharing, as stated in Article 2.30a Proposal EMD reform.

3.5.4 Type of membership participation

The Dutch Energy Act (Energiewet) and Heat Act (Wet collectieve warmte) both require that participation is open and voluntary, Article. 2.4 § 1 subsection a) Energy Act and Article 2.3 § 4 subsection b) Heat Act. Members have the right to leave the energy community/ heat community, Article 2.4 § 1 subsection b) Energiewet and Article 2.3 § 4 subsection c) Heat Act.

Active customers or energy communities can freely enter into a sharing agreement, independent of the supplier they contracted, Articles 2.30 § 1 and 2.3 § 1 subsection d) Proposal EMD reform.

3.5.5 Community control

For all energy communities, the basic rule is that '*effective control over the energy community lies with members, partners, or shareholders who are natural persons, micro-enterprises, small enterprises, municipalities, water boards, provinces, or joint arrangements of public cooperation bodies*'.

In case the energy community develops renewable energy projects, there is an additional requirement that the actual control lies with those members, partners, or shareholders of the legal entity who are established in the *vicinity* of the renewable energy projects. Vicinity is not defined (yet) Article 2.4 § 2 subsection b) Energy Act.

For heat communities, the 'effective control over the heat community lies with the members, partners, or shareholders of the legal entity who are established in the vicinity of the collective heat supply, which is owned and developed by the heat community' (Article 2.3 § 4 subsection d) Energy Act).
Moreover, a heat community may stipulate in its Articles of association that the participating members, partners, or shareholders have equal voting rights (Article 2.3 § 5 Heating Act).

Control is further governed in accordance with Dutch legal entities law (Boek 2 Burgerlijk Wetboek).

3.5.6 Representation

The law does not, in principle, prohibit community tasks from being delegated to third parties. Depending on the activity they engage in, certain conditions apply. An energy community may, under specific circumstances, be granted an exemption from certain obligations; one example is the supply licence, Article 2.17 § 2 Energiewet. However, if the energy community subsequently transfers this task to a supplier (a market party), it is likely that the regular obligations will apply to that party, and that they will not qualify for the exemption.

Within the community, arrangements concerning its representation will be made in accordance with the law on legal entities, Book 2 of the Dutch Civil Code (Burgerlijk Wetboek).

The Heat Act requires that the heat community appointed as the heat company for a collective heating system carry out all responsibilities related to operating the system and delivering heat to customers. A key principle for the legislator is that the heat company is fully responsible for the delivery of heat, covering both the network and the supply. However, this does not prevent a heat company from assigning part of its tasks to another party (Article 2.12, paragraph 5). It may contract third parties to perform certain tasks, not all, but the heat community, acting as the heat company, remains ultimately accountable to the customer.

In relation to energy sharing, the sharing partners or the energy community appoint a point of contact. The appointed party will at least be the point of contact for the DSO/TSO and has the responsibility to register the sharing agreement. In addition, the sharing partners/ community can appoint an energy sharing organiser (Articles 2.30a § 3 and 2.30c § 2 and 3), who facilitates part of the sharing activity. The organiser can be one of the sharing partners or a professional party. Further rules on the facilitation of energy sharing by an energy sharing organiser shall be laid down by or pursuant to a general administrative order (Article 2.30c § 3).

3.5.7 Legally enabled activities

The energy community is defined as a legal entity that: for the benefit of its members, partners, or shareholders carries out activities in the energy market and has as its primary objective the provision of environmental, economic, or social benefits to its members, partners, or shareholders or to the local areas in which it operates, and is not aimed at making a profit (Article 1.1 Energy Act). The Energy Act does not give an exhaustive list of the activities that energy communities can engage in. The Energy Act is based on the assumption that it should not matter who is engaged in a market activity, but it is the activity itself that determines which rules apply. In the explanatory memorandum, this is explained as follows: Chapter 2 in the Energy Act is '*primarily structured based on market activities rather than actors. This classification has the advantage that the question of who performs a market activity—such as a traditional supplier or a party presenting itself as an energy community—is less relevant, and a non-discriminatory framework is established for the various market participants. Each player engaging in an activity, within this framework, in principle has access to the different markets on equal terms*'[26].

Chapter 2 of the Energy Act covers many activities, including supply, production, aggregation, and sharing. Energy communities are not allowed to own and operate electricity networks.

For energy communities, there is one major exception made. Energy communities can, under certain conditions, supply their members without a supply licence, Article 2.17 § 2 Energy Act. These rules have been established so that 'end consumers can supply energy and are not to be disproportionately hindered in doing so'.[27]

Energy sharing is one of the activities energy communities can engage in.

To enable energy communities to become active in energy markets, the Dutch legislator decided to allow energy communities to become active in the heat market. The heat market is undergoing significant reform. Until now, the market has primarily been dominated by commercial companies. With the introduction of the new Heat Act, the participation of commercial parties will be restricted. In the future, only heat companies that are more than 50% publicly owned will be allowed to operate as heat providers.

[26] Explanatory memorandum Energy Act, p. 13 (Kmst II 2022-23, 36 378, nr. 3, p. 13)
[27] Idem, p. 42

An important exception to this rule is that, under the Renewable Energy Directive and the provisions concerning Renewable Energy Communities, the legislator is obliged to allow energy communities to participate in the heat market as well. Therefore, in addition to public entities, heat communities are also permitted to operate in this market, Article 2.2 § 2 Heat Act. They are allowed to establish their own heat company and may carry out all activities related to the production, supply, and management of heat networks. While they may outsource part of these activities to third parties, the responsibility towards their members, shareholders, and/or partners remains largely (there are some exceptions) with the heat community and cannot be transferred to a third party (Article 2.13 Heat Act).

Next to the appointed heat companies, the Heat Act also allows for energy communities, together with public and commercial companies, to become active in so-called small heat systems. The difference between the small systems (up to 1500 connections) and larger systems is that the ownership rules do not apply, and for the qualification, there is a kind of 'light regime', see also Chapter 3 Heat act on small systems.

3.5.8 Asset ownership

Energy communities can own, lease or rent assets, like other market participants. The Energy Act does not contain specific rules around ownership of energy communities. The explanatory memorandum says: '*under this legislative proposal, an energy community is not granted any specific rights. It may act as a market participant, and depending on the activities it undertakes, the relevant legal provisions will apply*'[28].

However, if the energy community produces renewable energy, then there are additional requirements in relation to who is eligible to become part of the energy community (see also Section 3.5.3).

Energy sharing is defined as self-consumption of renewable energy by an active customer that '*is generated or stored by an installation located behind another connection that the active consumers jointly own, lease, or rent, in whole or in part*', or '*to which the right has been transferred, whether free of charge or not, by another active consumer*' (Article 1.1 Energy Act). There are, however, limitations on the size of the assets (max 6 MW) that large companies can bring in energy sharing agreements (Article 2.30 § 2 subsection a Proposal EMD reform).

A heat community that wants to become the appointed heat company in an area is required to own the heat network, Article 2.45 of the Heat Act. If it does not own the network, it cannot act as a heat company, unless it operates a small system, see Chapter 3 of the Heat Act.

A heat community may also own a heat production installation, although this is not mandatory. In addition, an energy community may own a heat production facility and sell the heat to a public heat company or to another heat community that serves as the heat company in the relevant area. As the heat company is not obliged to own its production units, this is also an option.

[28] Kmst II 2022-23, 36 378, nr. 3, p. 240

3.5.9 Geographical limitation

For energy communities engaged in renewable energy, there is a geographical limitation on where the members, shareholders, or partners may be established. Only those participants who are based in the vicinity of the renewable energy project may exercise effective control within the energy community (Article 2.4 § 2 subsection b) Energy Act.

Besides this limitation on who can exercise control, there are no geographical limitations.

Collective heating systems are seen as geographically limited systems. Therefore, only members, shareholders or partners that are established in the vicinity of the collective system, a system that is owned by the heat community, can have control within the energy community (Article 2.3 § 4 subsection d) Heat Act).

For energy sharing, no geographical limitations apply. However, rules concerning the geographical scope within which energy sharing is permitted may be laid down by or pursuant to a general administrative order, Article 2.30 § 2. This option is included because a limitation might be needed due to grid congestion[29].

3.5.10 Capacity limitation

There are no limits on the capacity of assets that can be owned or operated by energy communities in the Netherlands. No limits for collective heating systems either.

For energy sharing, there are capacity limitations. First of all, a large company that would like to participate in energy sharing can only participate if the installed capacity of the electricity generation installation used for energy sharing does not exceed 6 MW' (Article 2.30 § 2 subsection a) Proposal EMD reform).

Also, the law says that if an active customer shares from a unit with an installed capacity of more than 17 kW with a household of more than 55 kW with an apartment block or energy community, many of the rules that apply to supply, apply to sharing (Article 2.30a Proposal EMD reform).

3.5.11 Primary purpose

The primary purpose of the energy community is part of the second part of the energy community definition in the Dutch Energy Act stating that it 'has as its primary objective the provision of environmental, economic, or social benefits to its members, partners, or shareholders, or to the local areas in which it operates, and is not aimed at making a profit' (Article 1.1 Energy Act).

[29] Amendement nr. 56, Kmst II 2023-24, 36 378, nr. 56.

The Energy Act does not limit the energy community per se. It allows them to be active in and around energy markets, just as other parties may be active. To file for certain derogations, like the derogation from a supply licence, there are additional requirements.

Also, the purpose of the heat communities is similar to the definition of the energy community, with the difference that a heat community use renewable energy as its main source. The Heat Act defines, with Article 1.1, the purpose of the heat community as a legal entity or partnership that:

> a. operates as a heat company for the benefit of its members, partners, or shareholders;
> b. has as its primary objective the provision of environmental, economic, or social benefits to its members, partners, or shareholders, or to the local areas in which it operates;
> c. is not aimed at making a profit; and
> d. uses renewable heat sources as its main source of heat.

There is no clear purpose description in the definition of energy sharing. The purpose of energy sharing is discussed in the explanatory memorandum by the Proposal EMD reform and the Energy Act. The memorandum under the current Energy Act speaks of supporting the changing role of energy customers towards more active participants. The role these active customers and energy communities can play in increasing and uptake of renewable energy. Energy sharing, with the limitation that all participants need to have an agreement with the same supplier, is seen as a first step to support this purpose. The next step is to implement energy sharing independent of the contracted supplier.

The proposal to implement the EMD reform refers to the recitals of the Directive and describes the purpose of energy sharing as: '*through energy sharing, the directive aims to enhance the resilience of consumers against the effects of high and volatile prices, and to offer greater opportunities to consumers with limited (financial) means. […] This strengthens the position of the consumer and also has a positive effect on the consumption of renewable energy*'[30].

[30] Explanatory memorandum ('*memorie van toelichting*') by Wijziging van de Energiewet ter implementatie van het EU wetgevingspakket inzake het verbeteren van de opzet van de elektriciteitsmarkt van de Unie en de verbetering van de bescherming van de Unie tegen marktmanipulatie op de groothandelsmarkt voor energie, d.d. 8 november 2024, p. 6

4. Energy Sharing

The term '*sharing'* has been introduced by the EU legislation when the CEP enabled active customers to share electricity within other premises (Article 2(8) EMD). Its importance has been reinforced when both EMD and RED enabled CECs and RECs to share among the community members the electricity generated in the production unit owned by the ECs (Article 16(3)(e) of the EMD and Article 22(2)(b) of the RED).

As explained in the section above, some Member States, while transposing the RED II and EMD, chose to expand the activities of ECs for managing collective self-consumption; therefore, expanding the scope of ECs. In this circumstance, ECs could then manage the energy sharing of production units owned by the community together with other units owned by its members. Although the latter Directive has not been transposed by several Member States until 1 August, these provisions will undoubtedly affect the activities of energy sharing within ECs.

The mapping of the legislative and regulatory framework aims to identify and interpret rules enabling energy sharing within ECs, underpinning rights and obligations that determine roles and responsibilities. It follows an analytical framework that divides the activity of energy sharing into seven phases: (1) licensing and permitting, (2) contracting, (3) agreement registration, (4) operations, (5) calculating the results, (6) registering results, and (7) setting financial effects (see Section 2.2.3).

4.1 Energy Sharing at the EU level

As mentioned above, the CEP introduced, through the RED II and EMD, the rights of ECs and active customers to share energy, but there are no provisions establishing rules or guidance about how the energy sharing should be managed and operated at the level of licensing, contractual or energy system operation level. This legal framework changed after the EMD reform, through Directive (EU) 2024/1711. The latter inserted the definition of energy sharing in Article 2(10a) and a set of provisions in Article 15a covering contracts, management and operation of energy sharing.

The section below will focus on how the EU law regulates energy sharing, including the provisions of Article 15a of Directive (EU) 2024/1711.

4.1.1 Permitting and licensing

Permitting and licensing procedures constitute essential legal preconditions for the implementation of the whole 'energy sharing process'. They can be subdivided by considering (i) procedures related to the installation of energy generation units, and (ii) procedures related to the registration of energy communities.

It is important to recall that the competence to define permitting and licensing procedures lies with the Member States, as these are procedures embedded in their respective national administrative law frameworks. Such national discretion includes, inter alia, the determination

of the type of license or permit required, the competent authority and the procedural path to be followed.

In this context, the European Union retains the competence to require Member States to establish frameworks that eliminate unjustified regulatory and administrative barriers to the development of RECs. This is explicitly provided in Article 22(4)(a) of the RED. Furthermore, the European Union is empowered to introduce provisions aimed at accelerating permitting and licensing procedures, including the setting of a maximum threshold for the duration of administrative procedures.

Pursuant to Article 16 of the RED, the permit-granting procedure encompasses all relevant administrative permits required to construct, repower and operate renewable energy installations. The permit-granting process covers the entire administrative timeline: from the acknowledgement of the completeness of the application to the final decision issued by the competent national authority. Member States are required to designate 'contact points' that shall, upon request, assist and facilitate the applicant throughout the entire administrative permit-application and permit-granting procedure.

The revised RED (Directive (EU) 2023/2413) includes strengthened provisions on permitting procedures specifically tailored to RECs.

Firstly, under the amended Article 16(4), the '*contact point*' shall make available a manual of procedure for developers of renewable energy plants and shall provide that information online, addressing distinctly not only small-scale renewable energy projects and renewable self-consumers projects, but also RECs.

Secondly, the newly inserted Article 16d(2) requires that Member States ensure the permit-granting procedure for solar energy equipment installations with a capacity of 100kW or less – including those undertaken by renewable self-consumers and RECs – does not exceed one month. If the competent authority or entity fails to respond within this timeframe following the submission of a complete application, the permit shall be considered granted (i.e. administrative 'positive silence' applies), provided that the installed capacity does not exceed the existing capacity of the grid connection. This is because – as clarified by recital 42 - installations below 100 kW are generally not expected to adversely affect the grid or the environment, nor do they typically require capacity extensions at the connection point. Moreover, when applying the 100 kW threshold poses a significant administrative burden or grid constraint, Member States can apply a lower threshold, provided that it does not fall below 10.8 kW.

As regards the registration and licensing procedures to which RECs are subject, they also fall under the Member States' competence. The RED merely requires them to provide a framework ensuring fairness, proportionality and transparency (Article 22(4)(d)).

4.1.2 Contracting

Energy sharing agreements define the amount of shared energy between community members involved in an energy sharing scheme, as well as the conditions for such activity, particularly the allocation of balancing responsibility.

Calculation methods for shared energy (the so-called '*sharing keys*') are pre-defined and agreed upon by energy communities and active customers. Neither Article 22 of the RED nor Article 16 of the EMD, providing for RECs and CECs, respectively, rule on the calculation methods for sharing energy at the EU level.

Only with the reform of the EMD, Directive (EU) 2024/1711 introduced measures concerning sharing keys for energy sharing activities regulated under Article 15a. Firstly, according to the definition of energy sharing in Article 2(10a), active customers must have the right to share energy '*for a price or free of charge*'. This provision could be interpreted as limiting the Member States to restrict sharing to an activity without remuneration. Secondly, Recital 24 states that the '*output of [energy sharing] facilities should be distributed among the aggregated consumer load profiles based on static, variable or dynamic calculation methods that can be pre-defined or agreed upon by the active customers*'. Therefore, when an activity of energy sharing is performed for a prince, benefits could be distributed among community members in the contracting phase, which could be based on static, variable or dynamic sharing keys. Considering that Recitals are not binding on Member States, it is for the latter to regulate the sharing keys.

Calculation methods for shared energy (the so-called '*sharing keys*') are pre-defined and agreed upon by energy communities and active customers, and they can be static, variable or dynamic (recital 24 of the amended EMD).

Balancing responsibility also pertains to the '*contracting*' phase. As a general rule, Regulation (EU) 2019/943, Article 5(1) establishes that:

> '*All market participants shall be responsible for the imbalances they cause in the system. To that end, market participants shall either be balance responsible parties or shall contractually delegate their responsibility to a balance responsible party of their choice. Each balance responsible party shall be financially responsible for its imbalances and shall strive to be balanced or shall help the electricity system to be balanced*'.

According to the EMD, active customers are financially responsible for imbalances they cause (Article 15(2)(e)). On the other hand, Article 5 of Regulation 2019/943 allows Member States to provide derogations from balance responsibility when power-generating facilities using renewable energy sources have an installed electricity capacity of less than 400 kW (and 200 kW from 1 January 2026), which is the case for most householders with installed PV (Photovoltaics). Under this scenario, Member States shall ensure that the financial responsibility for imbalances is fulfilled by another market participant.

In the case of ECs, Article 16(3)(c) of the EMD provides that CECs are financially responsible for the imbalances they cause in the electricity system. To that extent, CECs shall be the balance responsible parties (BRP) or shall delegate their balance responsibility in accordance with Article 5 of Regulation (EU) 2019/943.

For RECs' balancing responsibility, the RED states that when they supply energy or provide aggregation or other commercial energy services, they are subject to the provisions relevant for such activities (Article 22(4)(b)). Provisions on balancing responsibility are therefore included.

Active customers engaged in energy sharing schemes under Article 15a of the amended EMD '*are financially responsible for the imbalances that they cause, without prejudice to the possibility for active customers to delegate their balancing responsibilities to other market participants*' (recital 24).

In principle, energy sharing can occur only under conditions where the balancing responsibility is allocated to a market participant. Generally, any active customer is responsible for the imbalances (Article 15(2)(f)). CECs are financially responsible for the imbalances they cause in the electricity system (art. 16(3)(c) EMD). On the other hand, according to the RED II (Art. 22(4)(b)), RECs acting as suppliers or providing aggregation or other commercial services are subject to the relevant provisions for such activities, including provisions governing responsibility for imbalances. The provision on the balancing responsibility of ECs may be read in conjunction with the recent amendment to the EMD. According to Article 15a(3) and (c), active customers may appoint a third party, which could be the energy sharing organiser, to provide balancing behind-the-meter flexible loads.

It is worth noting that, as clarified by recital 19 of the amended EMD, suppliers' balancing responsibility is limited to metering and billing points to which they supply. Therefore, the interpretation of this recital in conjunction with recital 24 and Article 15(2)(f) regarding the responsibility for imbalances in energy sharing schemes leads us to the conclusion that suppliers could only be considered balancing responsible parties through a contract if they agreed to do so.

On a more general level, balance responsible parties shall treat active customers engaged in energy sharing in a fair and non-discriminatory way (Article 15a(4)(f)).

4.1.3 Agreement Registration

Neither Article 22 of the RED nor Article 16 of the EMD, providing the most detailed EU rules for RECs and CECs, respectively, provides details as to the competent authority to hold the energy sharing agreement registration, nor the procedure required for such registration.

The legislation provides, on a more general level, that CECs should be 'treated in a non-discriminatory and proportionate manner with regard to their activities, rights and obligations as final customers, producers, suppliers, distribution system operators or market participants engaged in aggregation' (Article 16(3)(b) EMD) and that, similarly RECs should not be 'subject to discriminatory treatment with regard to their activities, rights and obligations as final customers, producers, suppliers, distribution system operators, or as other market participants' (Article 22(4)(e) RED).

Article 15a of the EMD is more specific on this matter, requiring in paragraph 6(b)(i) that Member States shall ensure that relevant transmission system operators or distribution system operators or other designated bodies provide a relevant contact point to register energy sharing arrangements.

4.1.4 Operation

According to the Energy Community Repository, virtual energy sharing is by far the predominant operation of energy sharing in the EU [19]. This is the case for the pilots involved in the U2Demo Project.

> '*Virtual energy sharing involves the use of the public grid, which firstly accounts for the energy flows generated by each member, and only later, virtually, associates the energy-sharing capacity among community members. Each community member corresponds to a single point of delivery (POD). Therefore, physical sharing of energy continues to exist but takes place over extensive portions of the public grid*'[31].

For Article 15a of EMD, one could imply that the energy sharing introduced by the EMD reform concerns virtual energy sharing only, considering Article 15(4)(a): *'Member States must ensure that active customers participating in energy sharing are entitled to have the shared electricity injected into the grid*'. This interpretation is confirmed by the Recital (24) of Directive (EU) 2024/1711, which states that '*energy sharing operationalises the collective consumption of self-generated or stored electricity injected into the public grid by more than one jointly acting active customer*'.

Under the assumption that energy sharing is operated virtually *within* ECs, the key questions concern whether ECs are entitled to operate the distribution system, as well as the legal obligations of DSOs and energy suppliers as facilitators of energy sharing.

Article 16(2)(b) EMD leaves to the Member States to decide whether ECs could be '*entitled to own, establish, purchase or lease distribution networks and to autonomously manage them subject to conditions set out in paragraph 4*' of the same Article. In this case, Article 16(4) of EMD complements the provision of paragraph 2 by stating that, when Member States decide to provide the CECs' right to manage distribution networks in their area of operation and establish the relevant procedures, it cannot prejudice other rules and regulations applying to distribution system operators.

The interpretation of Article 16(2)(b) and (4) has been of interest to the E.DSO. In its position paper, E.DSO argues that these provisions must be interpreted as follows '*CECs, when allowed to become distribution system operators […], should adhere to the same obligations and fulfil the same responsibilities as other distribution system operators*' [21].

It is also equally important to highlight that Article 16(4) has recently been subject to the interpretation of the Court of Justice of the European Union in a judgment of Case C-293/23 *ENGIE Deutschland,* decided on 28 November 2024. The CJEU reinforced that Article 16 must be interpreted as not precluding the CECs from '*benefit from the exemptions provided for in Article 38(2) of that directive in favour of closed distribution systems*'[32].

---

[31] For the definition of virtual and physical sharing, see [20].

[32] C-293/23, *ENGIE Deutschland GmbH v Landesregulierungsbehörde beim Sächsischen Staatsministerium für Wirtschaft, Arbeit und Verkehr*, judgment of the Court (Fifth Chamber) of 28 November 2024.

According to the Energy Community Repository, the vast majority of the CECs do not operate distribution network systems, relying on DSOs to facilitate their sharing activities. In this case, the EU law imposes on DSOs the obligation to facilitate energy sharing within the ECs. Both EMD and RED determine that 'relevant distribution system operators cooperate with [CECs and RECs] to facilitate electricity transfers within ECs' (Article 16(1)(d) of EMD and Article 22(4)(c) RED).

Concerning the network tariffs, Article 16(1)(d) of EMD reinforces that this facilitation of the DSOs must be '*subject to fair compensation and assessed by the regulatory authority*'. Without prejudice to the fair compensation of DSOs, CECs and RECs must be subject to transparent, non-discriminatory and cost-reflective network charges in accordance with Article 18 of Regulation (EU) 2019/94 (Article 16(1)(e) EMD and Article 22(4)(2) RED). Therefore, it is for the national regulatory authority to decide whether facilitation of energy sharing performed by the DSOs must be compensated and, if so, how to design network tariffs that are transparent, non-discriminatory and cost-reflective.

Depending on the operational model, energy sharing may require the facilitation of the energy supplier contracted directly with the community. Neither Article 22 of the RED nor Article 16 of the EMD, providing for RECs and CECs, imposes an obligation on suppliers to facilitate energy sharing. The only provisions that are applied to this matter are the general provision establishing that RECs and CECs should not be subject to discriminatory treatment with regard to their activities. (Article 16(3)(b) EMD and Article 22(4)(e) RED)).

In the EMD reform, however, Directive (EU) 2024/1711, besides reinforcing the obligation of non-discrimination of suppliers through amending Article 15a(4)(a), has also advanced other obligations on suppliers that benefit energy sharing. According to Article 4, '*Member States shall ensure that all customers are free to have more than one electricity supply contract or energy sharing agreement at the same time*'. Moreover, Article 11(c)(1b) Member States shall ensure that final customers with fixed-term, fixed-price electricity supply contracts are not excluded from their participation, when they so decide, in demand response and energy sharing.

One operational aspect that requires further attention is the restriction on the energy assets shared within the ECs through energy sharing schemes. Article 16(3)(e) of the EMD and Article 22(2)(b) of the RED limit the right to energy sharing *within* an EC to the (renewable) energy that is produced by the production units owned by the EC. Under this provision, for instance, an EC cannot purchase electricity through a PPA and redistribute it to community members as energy sharing. In this circumstance, the energy purchased through PPA must be exchange within the community through an energy supply agreement.

Based on the textual interpretation of Article 16(3)(e) of the EMD and Article 22(2)(b) of the RED, it is unclear whether the Member State would enable ECs to share energy from production units owned by their members, instead of the production units owned by ECs only. The reform of the EMD, approved through Directive (EU) 2024/1711, tries to enhance clarity by allowing energy sharing members based on private agreements or through a legal entity (Article 15a(2)), while recital 23 clarifies its interpretation in combination with the provision enabling CECs and RECs of Article 16(1)(e) EMD and Article 22(4)(2) RED):

> '*A legal entity that incorporates the criteria of a renewable energy community as defined in Article 2, point (16), of Directive (EU) 2018/2001 or a citizen energy*

> *community as defined in Article 2, point (11), of Directive (EU) 2019/944 could share with their members electricity generated from facilities they have in full ownership*'.

Despite the provision in both EMD and RED, as well as the recital 23 introduced in the EMD reform, it is still arguable whether the Member States could extend the rights of sharing within the EC to electricity produced by generation units not owned by the EC, strictly speaking. This is true, considering both EMD and RED are EU Directives that fall under a minimum harmonisation criterion. We will revisit these points when mapping the rules within Member States.

4.1.5 Calculating results

EU law on RECs and CECs does not provide details as to the competent actors and/or authorities for calculating the results of energy sharing that takes place within these communities. It also does not specify the applicable timeframes within which this calculation must take place. There are also no provisions detailing how such calculations should be structured.

The legislation provides, on a more general level, that CECs should be 'treated in a non-discriminatory and proportionate manner with regard to their activities, rights and obligations as final customers, producers, suppliers, distribution system operators or market participants engaged in aggregation' (Article 16(3)(b) EMD) and that, similarly RECs should not be 'subject to discriminatory treatment with regard to their activities, rights and obligations as final customers, producers, suppliers, distribution system operators, or as other market participants' (Article 22(4)(e) RED).

Article 15a of the EMD is more specific on the issue of calculation, requiring in paragraph 4(a) that active customers participating in energy sharing '*are entitled to have the shared electricity injected into the grid deducted from their total metered consumption within a time interval no longer than the imbalance settlement period and without prejudice to applicable non-discriminatory taxes, levies and cost-reflective network charges*'. Article 15a(6)(a) provides that Member States must ensure that TSOs, DSOs or other designated bodies should

> '*monitor, collect, validate and communicate metering data related to the shared electricity with relevant final customers and market participants at least every month, and in accordance with [the data management provisions under] Article 23, and for that purpose, put in place the appropriate IT systems*'.

Under Article 15a(6)(b)(iv), these actors must also provide a relevant contact point to 'validate calculation methods in a clear, transparent and timely manner'. These provisions are echoed and made even more specific in Recital 24 of the EMD reform (Directive (EU) 2024/1711), which states that Member States should put in place an IT infrastructure to facilitate the calculation of energy sharing results. However, as the statement is written within the Recitals, not among the provisional Articles amending the EMD, it lacks the binding effect on Member States. It should be read merely as a recommendation, not as a legal obligation.

4.1.6 Registering results

Neither Article 22 of the RED nor Article 16 of the EMD, which provide for RECs and CECs respectively, includes details as to the competent actors and/or authorities for registering the results of energy sharing that takes place within these communities. They also do not specify the applicable timeframes within which this registration must take place.

The legislation provides, on a more general level, that CECs should be '*treated in a non-discriminatory and proportionate manner with regard to their activities, rights and obligations as final customers, producers, suppliers, distribution system operators or market participants engaged in aggregation*' (Article 16(3)(b) EMD) and that, similarly RECs should not be '*subject to discriminatory treatment with regard to their activities, rights and obligations as final customers, producers, suppliers, distribution system operators, or as other market participants*' (Article 22(4)(e) RED).

Article 15a of the EMD is more specific on the issue of registration, requiring in paragraph 4(a) that active customers participating in energy sharing '*are entitled to have the shared electricity injected into the grid deducted from their total metered consumption within a time interval no longer than the imbalance settlement period and without prejudice to applicable non-discriminatory taxes, levies and cost-reflective network charges*'. As mentioned above, Article 15a(6)(a) provides that Member States must ensure that TSOs, DSOs or other designated bodies should 'monitor, collect, validate and communicate metering data related to the shared electricity with relevant final customers and market participants at least every month, and in accordance with [the data management provisions under] Article 23, and for that purpose, put in place the appropriate IT systems'.

4.1.7 Settling the financial effects

Article 16 of the EMD and Article 22 of the RED do not specify whether or not ECs can issue a bill separate from that of members' individual energy suppliers for the sharing of energy within the community. Article 18, in conjunction with Annexe I of the EMD, specifies the minimum requirements for bills and billing, but these requirements are applicable to billing for supply.

However, regarding the right to energy sharing under Article 15a of the EMD, paragraph (3)(c) provides that the energy sharing organiser may engage in '*contracting and billing active customers that participate in energy sharing*'. It should further be noted that the amendment of the EMD through Directive (EU) 2024/1711 entitles customers '*to have more than one electricity supply contract or energy sharing agreement at the same time, and that, for that purpose, customers are entitled to have more than one metering and billing point covered by the single connection point for their premises*' as per the revised Article 4. While not legally binding, it is also important to note that recital 24 of Directive (EU) 2024/1711 specifies that energy sharing should lead to a reduction of the bills of jointly acting active customers via an appropriate IT infrastructure put in place by Member States in order to adjust metered consumption. This seems to add more detail to Article 15a(4)(a), which only requires that shared energy injected into the grid be deducted from the metered consumption without addressing the issue of billing directly.

Article 16(2), subparagraph 2 of the EMD provides that electricity sharing in CECs should be subject to '*applicable network charges, tariffs and levies, in accordance with a transparent*

cost-benefit analysis of distributed energy resources developed by the competent national authority'. The RED, meanwhile, requires Member States to ensure that RECs 'are subject to fair, proportionate and transparent procedures, including registration and licensing procedures, and cost-reflective network charges, as well as relevant charges, levies and taxes, ensuring that they contribute, in an adequate, fair and balanced way, to the overall cost sharing of the system in line with a transparent cost-benefit analysis of distributed energy sources developed by the national competent authorities' as per Article 22(4)(d). As already discussed in sections 4.1.5 and 4.1.6 above, Article 15a(4)(a) of the EMD also provides that the deduction of shared electricity from active customers' metered consumption be '*without prejudice to applicable non-discriminatory taxes, levies and cost-reflective network charges*'. Additionally, the provisions regarding balance responsibility as already discussed in Section 4.1.2 apply.

4.2 Energy Sharing in Italy

'Shared energy' within CECs and RECs is defined – per Article 14(8)(b) of Decreto Legislativo 210/21 and Article 2(1)(q) of d. lgs 199/21 – as the minimum, in each hourly period, between the energy produced and fed into the grid and that withdrawn by the community.

As mentioned under Section 2.1.1.4 on methodology, Article 15a on the '*right to energy sharing*' under Directive (EU) 2024/1711 shall be implemented by 17 July 2026. The European Commission has initiated an infringement procedure[33] against Italy for its failure to transpose the other provisions of the Directive, which were to be transposed by 17 January 2025. In June 2025, the Italian Parliament approved the Draft Law on the 'Delegation to the Government for the transposition of European Directives and the implementation of other acts of the European Union ('*Disegno di legge recante delega al Governo per il recepimento delle direttive europee e l'attuazione di altri atti dell'Unione Europea*'.[34] The transposition of Directive (EU) 2024/1711, to be carried out by legislative decree, is provided for in Annex A of such Draft law (commonly referred to as 'European Delegation Law', '*Legge di Delegazione europea'*). The Directives included in Annex A are those which – following the parliamentary review – do not require specific guiding principles or criteria for delegation to the Government for their transposition into national law. At the time of drafting this report, the Italian Government had not yet issued the corresponding legislative decree[35], which might include an early transposition of Article 15a.

4.2.1 Permitting and licensing

Legislative Decree n.190 of 25 November 2024, commonly referred to as the Consolidated Act of Renewables ('*Testo Unico Rinnovabili*'), reorganised the administrative procedures governing the construction and operation of renewable energy production plants. These procedures include: (i) free-building activities ('*attivita edilizia libera'*); (ii) the simplified enabling

[33] INFR(2025)0148 of 26 March 2025.
[34] Law of 13 June 2025 n.91.
[35] According to Article 31 of Law 24 December 2012 n.234, for directives whose transposition deadline has already expired, the Government shall adopt the legislative decree implementing European legislation within three months from the date of entry into force of the 'European Delegation Law' (i.e. from 10 July 2025).

procedure (‘*procedura abilitativa semplificata*’, PAS); and (iii) the single authorisation (‘*autorizzazione unica*’, AU). They are respectively governed by Article 7 (and Annexe A), Article 8 (and Annexe B), and Article 9 (and Annexe C). The applicable procedure depends on the type of renewable energy source, the plant’s installed capacity, and its location.

For instance, when PV solar systems with a capacity of less than 12 MW are integrated onto the roofs of existing structures or buildings, or on their appurtenances, they are subject to the ‘*free-building regime*’, provided that they maintain the same slope and orientation of the roof plane, and not alter the shape of the structure or building, and have a surface area not exceeding that of the roof on which they are installed (Article 7 and Annex A, Section I (1)(a)). The ‘*free building regime*’ – according to DPR n. 380/2001 (‘*Testo Unico Edilizia’*) - does not require the acquisition of permits, authorisations, or any form of administrative approval, nor the submission of any communication, certification, notification or declaration to public authorities. For ‘free building’ interventions up to 200 kW, the energy community representative can use a ‘*simplified single model*’ (‘*modello unico semplificato*’) for the construction, connection and operation of PV systems on buildings, pursuant to Article 25 of d.lgs 199/21 (and referenced in Article 7(10) of the Consolidated Act of Renewables). This model consists of two parts: one to be submitted prior to the commencement of works, and one upon completion. The form may be filled in by the owner of the building, the holder of other entitlement rights, or the condominium administrator. Through this form: (i) commencement of works is notified, (ii) connection to the electricity grid is requested, and (iii) authorisation is granted to the network operator to debit the connection costs directly from the applicant’s bank account. Specifically, prior to commencement of works, the form declares: (a) acceptance of the contractual terms and conditions of the grid operator; (b) that the installation qualifies as a ‘free building’ activity; (c) optionally, the intention to benefit from the energy withdrawal service provided the GSE (‘*Ritiro dedicato*’); (d) that the system will be built at a final customer site already equipped with an active supply point and will have an overall capacity not exceeding 200 kw; (e) that the applicant authorizes the grid operator and GSE for data management.

4.2.2 Contracting

The energy sharing agreement is a private law agreement entered into by community members. Pursuant to Article 14(5) of Decreto Legislativo 210/21 and Article 32(1)(c) of Decreto Legislativo 199/21, members of CECs and RECs shall regulate their relations by means of a private law contract. Within such an agreement, they may define the sharing keys (static, variable or dynamic) as well as the conditions governing energy sharing.

With regard to balance responsibility, according to Article 14(10)(a), the Italian Regulatory Authority, ARERA, is entrusted with ensuring that CECs are financially responsible for any imbalances they may cause in the system, either by assuming balance responsibility directly or by delegating it to a third party, in accordance with Article 5 of Regulation (EU) 2019/943. CECs may, in fact, participate – either directly or through aggregators – in all electricity and related service markets, subject to network security constraints and in a non-discriminatory manner.

In Italy, the dispatching service is carried out by the TSO ‘*TERNA*’, which is responsible for the coordinated management of electricity injections and withdrawals on the national transmission grid to ensure system balancing. The GSE is tasked with improving forecasting activities for electricity injections in order to minimise the actual imbalance generated by renewable production units, including those of energy communities. According to the amendments

introduced by the new Integrated Text on Electric Dispatching ('*Testo Integrato del Dispacciamento Elettrico*', TIDE),[36] starting from 1 January 2025, the imbalance settlement period has been reduced to 15 minutes, as opposed to the previous 60 minutes.

4.2.3 Agreement Registration

The establishment of energy communities is finalised by means of a public deed or a private agreement, depending on the legal form chosen by the parties (described under Section 3.2.1). In most cases, the law requires a public deed, whereas a private agreement is sufficient when establishing energy communities in the form of 'non-recognised associations' ('*associazioni non riconosciute*').

There are no national or regional registries specifically dedicated to energy communities and to the agreements that their members may conclude. This is expressly established for RECs by Article 8(1)(e) of Decreto Legislativo 199/21.

Instead, an online platform managed by GSE is available for accessing the 'distributed self-consumption service' and dedicated grants and incentives for RECs and CECs (as described under Section 4.2.5 on calculating results of energy sharing). The designated '*Soggetto Referente'* shall submit an online request to the GSE to access such service. As provided by Article 4 of the TIAD and by Part II Chapter 2 of the GSE's 'Operational Rules', the GSE carries out a technical and administrative assessment of the information and documentation provided and communicates the outcome to the '*Soggetto Referente'*. The GSE may approve the request, ask for additional information, or reject it. The entire procedure shall be completed within three months from the application submission, and the 'positive silence' mechanism does not apply, as an explicit decision by the GSE is required. If the evaluation is positive, GSE proceeds with the execution of a contract governing the above-mentioned service. Following the conclusion of this contract, the energy community becomes fully operative and entitled to access the economic grants and incentives.

Pursuant to Article 8 of the TIAD, within 15 days from the execution of such contract, the GSE shall notify the list of connection points related to the above-mentioned service to the entities responsible for the management of metering data. The DSO shall then transmit to the GSE information on the relevant connection points and withdrawal points. The Manager of the Integrated Information System ('*Gestore del Sistema Informativo Integrato*') shall define the procedures for making available to the GSE the data included in the Official Central Register ('*Registro Centrale Ufficiale'*), that is the national database of withdrawal points and final customers' data. The entities responsible for the management of metering data shall transmit to the GSE the measurements of electricity injected into and withdrawn from the grid through each connection point. At the end of each year, these entities can complete and rectify any errors in the metering data.

[36] As established by the ARERA Resolution n.345/2023.

4.2.4 Operation

Pursuant to Article 14(7) of Decreto Legislativo 210/21, the sharing of electricity produced by energy communities may take place through the existing distribution network and, under specific technical reasons, taking into account the cost-benefit ratio for final customers, also by virtue of lease agreements or purchase of portions of the same network or a newly constructed network. When the distribution network is managed by the CEC, subject to prior authorisation by the Ministry of Environment and Energy Security, a sub-concession agreement shall be entered into between the distribution company holding the concession for the network used by the community and the community itself. Distribution networks managed by the CECs are considered public distribution networks with an obligation to connect third parties, irrespective of network ownership. The community, as a sub-concessionaire of the electrical network used, shall comply with the same obligations and conditions prescribed for the concessionaire entity. The rental fees or sub-concession fees charged by the DSO must be in any case equitable and are subject to evaluation by ARERA.

Article 15 of Decreto Legislativo 210/21 provides that final customers participating in a CEC have the right to access electricity transmission and distribution systems on the basis of public tariffs – approved by ARERA – applicable to all customer categories and imposed by transmission and distribution system operators in an objective and non-discriminatory manner.

Italian legislation does not include provisions specifically addressing suppliers' obligations in facilitating energy sharing. Article 14(1) of Decreto Legislativo 210/21 fundamentally states that when final customers exercise their right to participate in the market as active customers, they shall not be subject to discriminatory or disproportionate procedures or charges, or to network charges that do not reflect actual costs.

Regarding the operational restrictions concerning the ownership of the energy asset, as illustrated under Section 3.2.8 on asset ownership for energy communities' governance, the facilities involved in energy sharing shall be under the 'availability and control' of energy communities. As clarified by the GSE Operational Rules, this expression encompasses not only right of ownership but also surface rights ('*diritto di superficie*'), usufruct ('*usufrutto'*), loan for use ('*comodato d'uso*') and rent ('*locazione').*

4.2.5 Calculating results

Within RECs, the person responsible for the allocation of shared energy is designated by the community members under a private agreement. He or she may be specifically entrusted with the management of payment and collection transactions with energy suppliers and with the GSE (as per Article 32(1)(c) of Decreto Legislativo 199/21). In CECs, Article 14(6)(e) of Decreto Legislativo 210/21 provides that the community itself is responsible for the allocation of the shared energy among its participants.

By definition, 'energy sharing' within CECs and RECs is calculated on an hourly basis (as per Article 14(8)(b) of Decreto Legislativo 210/21 and Article 2(1)(q) of d. lgs 199/21).

In Italy, the GSE is the competent entity for calculating the results of energy sharing, registering them and settling the related financial effects. Indeed, the GSE provides the 'distributed self-consumption service' for all self-consumption configurations, including energy communities.

This service – governed by the TIAD, the CACER Decree and the GSE's Operational Rules – is aimed at calculating and valuing energy that is produced, self-consumed and shared within energy communities.

In particular, energy communities, through their designated *Soggetto Referente*, which is responsible for submitting the application for the GSE's service, may access operating grants ('*contributi in conto esercizio*') and capital grants ('*contributi in conto capitale'*).

Operating grants include an 'incentive tariff' ('*tariffa incentivante*') – for RECs only – and a '*valorisation contribution*' ('*contributo per la valorizzazione*'). The incentive tariff consists of a fixed component (which depends on the size of the plant) and a variable component linked to the market price of energy. The 'valorisation contribution' is granted in the form of a '*cash-back*', which is calculated on a monthly basis by the GSE and that is defined annually by ARERA on the basis of grid benefits (representing avoided costs) resulting from self-consumption [22]. Furthermore, all electricity produced but not self-consumed can be valued under market conditions: community members who have produced it can request access to the economic conditions of the 'dedicated withdrawal scheme' ('*ritiro dedicato*') provided by the GSE.

Regarding the capital grants – that can be combined with the above-mentioned incentive tariff – these are reserved for RECs, pursuant to Mission 2, Component 2, Investment 1.2 of the National Recovery and Resilience Plan ('*Piano Nazionale di Ripresa e Resilienza*', PNRR).[37]

4.2.6 Registering results

The GSE is responsible for the registration of results of energy sharing that takes place within energy communities and for making them available to the parties involved in such activity, via the '*Soggetto Referente'*. This information is available on the online platform managed by GSE for the purposes of the 'distributed self-consumption service'.

4.2.7 Settling the financial effects

Community members are billed by their energy suppliers, and they receive the economic grants for energy sharing separately.

The settlement of energy sharing results is managed by the GSE, interacting with the '*Soggetto Referente'*, who is responsible for the allocation of economic grants among community members according to the agreed sharing keys.

Operating grants (the 'incentive tariff' and the 'valorisation contribution') are provided through the following mechanism, according to Part II Chapter 2 of GSE Operational Rules: during the

[37] Ministerial Decree n. 127 of 16 May 2025 amended certain provisions of the CACER Decree (and, consequently, the GSE Operational Rules), introducing several innovations concerning the granting of PNRR benefits for RECs. Among the other things, the Decree extended the scope of the PNRR-finances measure to municipalities with populations under 50,000 inhabitants, provided for greater flexibility in the timeframes for project commissioning, and introduced the possibility of requesting an advance payment of up to 30% of the grant amount.

first year, a monthly advance payment is made, determined on the basis of an estimate of the shared electricity and the applicable tariff. Then, the grant effectively due is calculated and settled on a monthly basis, based on the energy measurement data transmitted to the GSE by the network operators[38].

Annex I of Legislative Decree 210/21 is dedicated to minimum billing requirements and related information (but these requirements are applicable to billing for energy supply, as pointed out under Section 4.1.7 on settlement at the EU level). The Annex specifies the way in which the bill must be structured, through reference to Reg (EU) 2016/1952: the price charged to the final customer is made up of the energy and supply component, the network (transmission and distribution) component, and the component comprising taxes, fees and charges. There are no provisions addressing the possibility, for energy communities to issue a bill separate of that of supplier, for the activity of energy sharing.

Finally, regarding the impact that energy sharing may have on network charges paid by EC members, it is worth highlighting that pursuant to Article 14(1) of Legislative Decree 210/21, final customers shall have the right to participate in the market as active customers, without being subjected to discriminatory or disproportionate procedures or charges, nor to network charges that do not reflect actual costs. In particular, active customers, including those participating in energy communities, shall be subject to network charges designed to reflect costs, which are transparent and non-discriminatory, and shall separately account for the electricity fed into the grid and that withdrawn from the grid, in order to ensure an adequate and balanced contribution to the overall allocation of system costs. (Article 14(2)(e)).

4.3 Energy Sharing in Portugal

Article 189(2)(b) of Decree-Law 15/2022 entitled RECs to share (‘*partilhar*’) energy among its members, the renewable energy produced by UPAC at its service, which is extended to CECs by Article 191(2). Moreover, Article 86(3) reinforced that ECs could manage collective self-consumption (ACC), which has detailed management and operational rules, complemented by regulations. This report dives into the Portuguese legal and regulatory framework that enabled energy sharing within national law.

4.3.1 Permitting and licensing

The first step concerns the licensing for production and storage units, including UPAC.

First, Portuguese law imposes a ‘prior control procedure’ of the generation unit (Article 11(1) of Decree-Law 15/2022). There are three types of prior control procedures, and they diverge according to the required installed capacity. These are: (1) production and generation license, (2) prior registration and operating certificate, and (3) prior notification. Most of the UPACs involved within ECs fall into either the third or the second category of prior control procedures.

[38] See Part II, Chapter 2 of the GSE Operational Rules, and in particular, Section 2.2.2.1 for the ‘incentive tariff’ and Section 2.2.2.2. for the ‘valorisation contribution’.

According to Article 11(3) of Decree-Law 15/2022, these are the generation or storage units that must request prior registration and an operating certificate:

> a) The production of electricity from renewable energy sources for total injection into the RESP, with an installed capacity equal to or less than 1 MW;
> b) The production of electricity for self-consumption with an installed capacity greater than 30 kW and equal to or less than 1 MW;
> c) Electricity storage with installed capacity equal to or less than 1 MW;
> d) Research and development, demonstration and testing projects, in a real environment, of innovative technologies, products, services, processes and models, within the scope of activities related to production, storage and self-consumption with installed capacity greater than 30 kW.

According to Article 11(4) of Decree-Law 15/2022, these are the generation or storage units that must request prior notification:

> a) The production of electricity for self-consumption with an installed capacity greater than 700 W and equal to or less than 30 kW;

It is important to emphasise that Article 11(5) of Decree-Law 15/2022 exempts from prior control only the production of electricity for self-consumption with an installed capacity of 700W or less, provided that no surplus is expected to be fed into the RESP. Since the UPACs involved in energy sharing inject their surplus into the grid, they would require at least prior control based on prior notification.

The entity that exercises the powers of the licensing authority is the DGEG, which issues all decisions relating to the investigation and conduct of procedures for the granting, amendment, transfer and termination of control titles. The procedures for the allocation of production and exploration licences, the registration of production units and prior notification are carried out electronically via an electronic platform managed by the DGEG.

The procedures are the following:

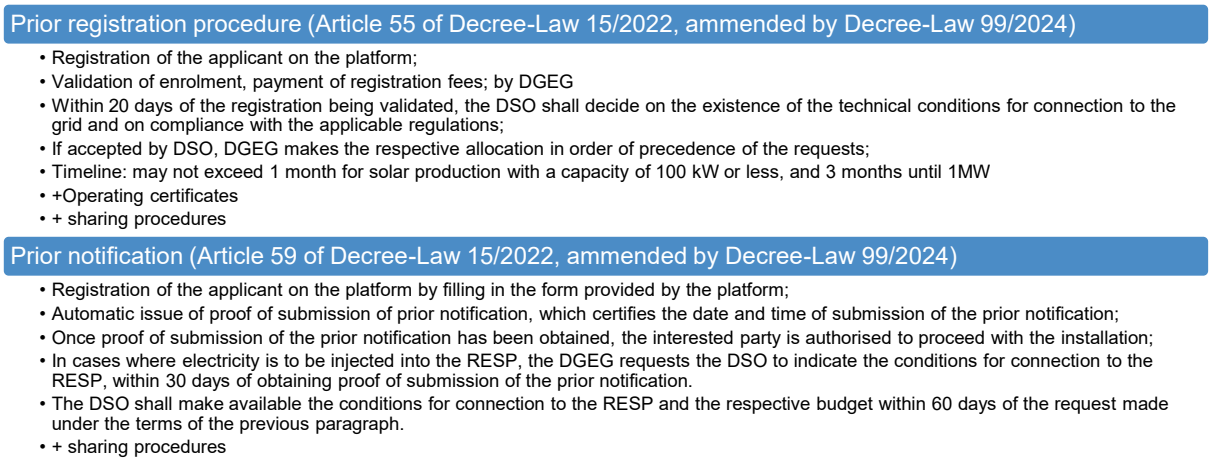

Figure 4.1 – Prior registration and notification procedures

It is worth noting that the installation of UPAC with an installed power rating exceeding 700 W must be carried out by a private electrical installation company or technicians responsible for the execution of electrical installations, in accordance with Law No. 14/2015 of 16 February and Decree Decree-Law No. 96/2017 of 10 August, both in their current wording. It should be noted that individual technicians are only qualified to install LV (PLow Voltage) systems up to 41.4 kVA.

Last but not least, it is mandatory to measure the total electrical energy produced by UPAC (using a totalising meter) when the IU associated with UPAC is connected to RESP and the installed power of UPAC exceeds 4 kW. For UPAC with installed power below 4kW, only a bidirectional meter is required. Both requests are submitted to the DSO once the prior control procedure is concluded (see section 3.3.2)

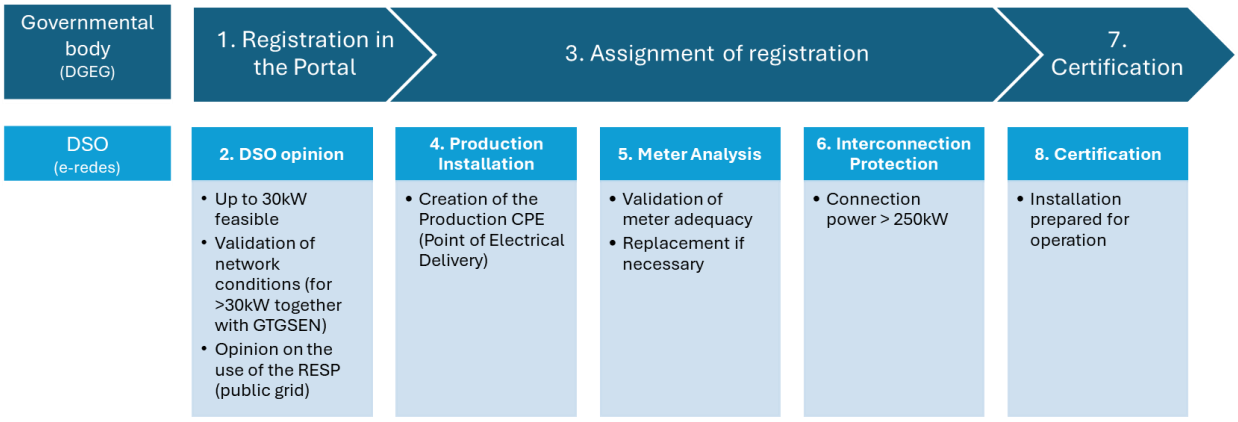

Figure 4.2 – Registration of Collective self-consumption

4.3.2 Contracting

According to Article 86(1) of Decree-Law No. 15/2022, active consumers participating in an ACC must draw up 'internal regulation' ('*regulamento interno*'). These regulations must define at least the following information:

- The requirements for new members to join and existing participants to leave;
- The required decision-making majorities;
- How the electricity produced for self-consumption is shared;
- The payment of any applicable fees (e.g., network access fees);
- The destination of self-consumption surpluses and the commercial relationship policy to be adopted and, where applicable, the application of the respective revenue (e.g., from the sale of surpluses of energy produced but not consumed in the IU). In short, this document describes and regulates the operating rules of the ACC in question.

Besides the contracting term of the energy sharing among participants, the members need to designate an EGAC. Within ECs, this role could be performed by the EC itself or a delegated third party. As abovementioned in section 3.3.6 on representation, Article 86(2) of Decree-Law No. 15/2022 establishes that:

> '*EGACs are responsible for 'operational management of the sharing activity, including the management of the internal network, where applicable, coordination with the electronic platform provided for in Article 15 [DGEG platform mentioned in Section 4.3.1], connection with the RESP and coordination with the respective operators, particularly in relation to the sharing of production and respective coefficients, where applicable, the commercial relationship to be adopted for surpluses, as well as others assigned to it by self-consumers'.*

Concerning the sharing keys, Portuguese law rules in detail. According to current legislation (Decree-Law No. 15/2022, of 14 January, and Self-Consumption Regulation No. 815/2023, of 27 July, approved by ERSE), there are currently four sharing modes: (1) fixed coefficients, (2) coefficients proportional to consumption, (3) hierarchical sharing, and (4) dynamic sharing. Participation in dynamic or hierarchical sharing must be communicated to the DSO. The main characteristics of each of the sharing modes are as follows[39]:

(1) *Fixed coefficients*. These coefficients, defined by EGAC, are differentiated by time for each accounting period (15 minutes). They can be differentiated, among other things, by working days and holidays or weekends, which may or may not take into account the seasons. The DSO performs the sharing based on the coefficients chosen by EGAC in each accounting period. Facilities that inject into the grid, regardless of being an IA (Autonomous storage facility participating in self-consumption), IPr (Electricity production facility for self-consumption) or IC (Consumption facility participating in self-consumption) with integrated UPAC or storage, can receive shared energy, provided they are not injecting during that period.

(2) *Coefficients proportional to consumption*. These coefficients are determined by the DSO and, as their name suggests, are proportional to consumption in IC, IPr and IA. The DSO defines sharing based on each participant's consumption in relation to the collective's total consumption, in each 15-minute accounting period.

(3) *Hierarchical sharing*. EGAC defines subgroups of participants, within which sharing is applied on a priority basis. It also defines the sharing mode between each group and between groups, choosing between fixed coefficients or sharing proportional to consumption. The DSO identifies the facilities in each group that use RESP. Sharing is done within each predefined group (with IC, IPr and IA), according to the chosen coefficients. The surplus energy is then shared with the consumer facilities (not necessarily only IC9) that still have consumption from the grid, according to the sharing mode between groups that was chosen. The energy for sharing that remains after the application of the allocation rules within each group and, if applicable, between groups, is considered surplus, for all intents and purposes.

[39] The description of each sharing key is extracted from [17].

(4) *Dynamic sharing.* This type of sharing allows EGAC to fully define the sharing criteria among participants (and implement any model). Individual coefficients are defined monthly for each pair of consumer and injector installations, in a matrix (different from aggregate production). Any installation can be a creditor of energy for sharing (as mentioned in the following point). In the case of dynamic sharing, unlike other forms of sharing (where energy is not allocated to facilities that are injecting), sharing with IPr, IA or IC with integrated storage or UPAC is not permitted during periods when there is no energy injection balance to the grid. This restriction is prohibited by Article 28(4) of the RAC.

If the EGAC fails to communicate the shared energy values or provides invalid data by the deadline mentioned in Clause 2, the ORD will finalise the energy sharing calculation based on the method that uses coefficients proportional to consumption.

4.3.3 Agreement Registration

According to Article 86(1) of Decree-Law No. 15/2022, the internal regulation establishing the terms and conditions of the '*autoconsumo coletivo'* (ACC) must be communicated to the DGEG within a maximum of three months after the '*Unidade de Produção para Autoconsumo'* (UPAC(s)) becomes operational. When ACCs are operated by ECs performing the role of EGACs, they are those that communicate with the DGEG.

Besides the Agreement registration at DGEG, Article 87(1) established that EGACs must also communicate with DSOs about sharing keys:

> '*EGAC, in cases where the UPAC is connected to the RESP, either directly or through an internal network, must notify the network operator, via the electronic platform provided for in Article 15 [DGEG platform mentioned in Section 4.3.1], of the intended sharing mode for the distribution of UPAC production among self-consumers participating in the ACC and its amendments, considering that, in the absence of such communication, the network operator shall allocate the production to each IU on a pro rata basis based on the consumption measured during the time period defined in the ERSE regulations*'.

4.3.4 Operation

Under the assumption that collective self-consumption is conducted as virtual energy sharing, the role and responsibilities distributed to the DSO at the operational level are significative in Portugal.

First, the DSO shall make available the information necessary for the correct invoicing of the different self-consumption players, under the terms of ERSE regulations. DSO must also inform the energy produced and not consumed in the time period defined in ERSE regulations, indicating the surplus injected into the grid by each self-consuming UI.

The supplier or aggregator with whom the self-consumer enters into a surplus contract must make available to all self-consumers the option of processing the billing of electricity under the terms of paragraph 11 of Article 36 of the Value Added Tax (VAT) Code, approved in the annexe to Decree-Law 394-B/84 of 26 December, in its current wording.

In particular, the supplier or aggregator with whom the self-consumer enters into a surplus contract must make available to all self-consumers the option of invoicing for electricity under the terms of Article 36(11) of the VA Code. It assumes the obligation to communicate the details of the invoices relating to the transaction of surplus energy produced for self-consumption.

There are no constraints that prevent RECs and CECs from being the only suppliers to their members. According to Decree-Law no. 15/2022, art. 132(3), the activity of electricity supply is legally separated from the other activities of the Portuguese national electricity system, without prejudice to the possibility of the supplier holding ownership rights over UPACs owned by self-consumers.

4.3.5 Calculating results

Energy sharing for self-consumption is calculated every 15 minutes, in line with the application of balances to the values collected by the metering equipment (Article 67(1) Decree-Law 15/2022). When connected to the RESP, the measurement and reading of electrical energy is carried out by the network operator, in accordance with ERSE regulations.

4.3.6 Registering results

According to the ERSE Self-Consumption Regulation (Article 28, paragraph 8), when the communication of the sharing model or the parameters associated with it by EGAC has an impact on the billing of each self-consumer, the network operator shall implement the change in the provision of data within seven days, without prejudice to its full application during the billing period immediately following the express or tacit formation of its acceptance, in accordance with applicable legislation, applying, if necessary, the new sharing model or parameters retroactively, from the beginning of that billing period.

4.3.7 Settling the financial effects

EGAC is the one responsible for settling the financial effects (see Figure 4.2). Suppliers will bill the surplus of energy consumed.

Collective self-consumption, applicable to both ECs and self-consumers, is encouraged through provisions concerning network tariffs (Article 212, Decree-Law no. 15/2022). Specifically, the CIEG (‘*custos de política energética, de sustentabilidade e de interesse económico geral’*) charges, which are costs related to energy policy, sustainability, and general economic interest, associated with self-consumed electricity provided by RESP, can be fully or partially deducted from network access tariffs. This deduction is to be authorised by the

government member responsible for the energy sector and must be issued by September 15 each year, following consultation with ERSE.

In relation to the tariffs applicable to storage facilities, Article 213 (Decree-Law no. 15/2022) stipulates that these tariffs must reflect both the costs imposed on the networks and the costs that are avoided for the Portuguese national electricity system, particularly in terms of enhancing the efficiency, resilience, and flexibility of the RESP. Furthermore, storage facilities will incur a single charge for the network use tariff applicable to both charging and injection, thereby preventing double charging for stored electricity. Additionally, storage facilities are exempt from the charges associated with the CIEG charge outlined in Article 208, which are imposed on the overall system use tariff.

4.4 Energy Sharing in Belgium (Flanders)

The provisions regarding energy sharing in Flanders are contained in the Energiedecreet, the TRDE and the Protocol, with the Energiebesluit in this regard principally dealing with the notification provisions attaching to ECs wishing to engage in energy sharing. The Energiebesluit also obliges the Flemish Regulator (VREG) to monitor energy sharing in Flanders as per Article 3.3.3., 6° and 7°.

Energy sharing itself is defined by Article 1.1.3, 38°/1 of the Energiedecreet as '*the free allocation over a single imbalance settlement period of all or part of the self-produced, and where applicable, stored energy injected into an electricity distribution network, the local transmission network for electricity, or a closed electricity distribution network between consumers*'.

4.4.1 Permitting and licensing

Four types of licence and/or permit are of relevance for energy sharing within ECs in Flanders: (1) the integrated environmental permit; (2) grid connection; (3) the production licence; (4) the supply licence.

The integrated environmental permit is required under the '*Omgevingsvergunningsdecreet'* (Environmental permit decree) of 25 April 2014. However, exemptions from the applicability of the (full) permitting regime apply[40]. For example, rooftop PV projects are generally exempt from having to obtain an integrated environmental permit if the installation is integrated into the slope of a roof or, in the case of a flat roof, is not higher than 1m above the roof edge as per the '*Vrijstellingsbesluit'* (Exemption Decision) of the Flemish Government of 16 July 2010, Article 2.1., 3° and Article 3.1, 3°[41]. As for grid connection, '*[t]he grid connection permit is merely an individual agreement between the DSO and the project developer*'[23, p. 12]. Operators of PV systems must obtain a grid connection permit if the installation's capacity exceeds 10 kW[23, p. 19]. For installations below this threshold, simple registration with the DSO suffices[23, p. 19].

[40] See also [23, p. 16]
[41] See also [23, p. 16]

The issuing of production licences is regulated at the federal level in Belgium by Royal Decree of 11 October 2000 on the granting of individual authorisations for the establishment of electricity production facilities (The Royal Decree of 11 October 2000). The Royal Decree of 11 October 2000 states in Article 2, §2 that new installations are exempt from authorisation if the capacity of the installation is less than 25 MW. Larger installations must obtain a production licence under Article 4 of the Royal Decree of 11 October 2000.

The conditions for granting the supply licence ('*leveringsvergunning*') are set out in Article 4.3.1. of the Energiedecreet, which tasks the Flemish regulator VREG with determining the conditions and procedures for granting a supply licence. However, energy sharing within ECs is unlikely to be considered a supply and the EC would thus not need a supply licence for this activity.

Article 4.8.3. of the Energiedecreet and Article 3.3.2. of the Energiebesluit lay down the rules for the registration of the EC itself. According to the Energiebesluit, the EC must make available to the Flemish Regulator VREG within 30 days of its establishment the following details:

- The name of the EC
- The type of EC
- The activities the EC intends to carry out (see Section 3.4.7)
- An overview of the types of members of the EC (natural persons, local authorities, small enterprises, medium enterprises, large enterprises)
- For RECs, justification of the way it conforms to the requirement of geographical or technical proximity (see Section 3.4.9)

Article 4.8.3. of the Energiedecreet obliges energy communities to notify the regulator VREG of all activities carried out and any change in these activities.

4.4.2 Contracting

As per the Energiedecreet, Article 4.8.1. § 2 with regard to CECs and 4.8.2. § 2 with regard to RECs, the members or partners of an EC must conclude an agreement with the EC on their rights and obligations. Where energy sharing is practised within the EC, this agreement must '*contain the rights and obligations of the members or partners of the energy sharing key applicable*'. The minimum content of the agreements between members or partners of an EC has been determined by the Flemish government in Article 3.3.1 of the Energiebesluit. *Inter alia*, where sharing is practised, the agreement must include '*the allocation method that applies and the financial consequences, if any, in the context of energy sharing, along with the conditions and procedure under which the allocation method can be modified. The rules for energy sharing are fair, transparent, and non-discriminatory*'.

The TRDE specify in Article 4.3.64 the various actors involved in energy sharing and P2P trading. These are: the DSOs, the access holders (defined as natural or legal persons having access to a closed distribution network by the TRDE), the parties engaged in energy sharing, and any third parties involved. These parties communicate in a framework of a protocol (minimum requirements and procedure for drafting set out in Article 4.3.64 §2 TRDE, and framework conditions specified in Article 4.3.65. TRDE) which is prepared by the DSO and then finalised in consultation with relevant stakeholders. According to Section 6 of the Protocol, it is possible to choose a fixed sharing key ('*vaste verdeelsleutel'*), a relative sharing key ('*relative verdeelsleutel'*) and an optimal sharing key ('*optimale verdeelsleutel'*). Using a fixed

sharing key, all partners or members participating in sharing receive a pre-determined percentage of the energy produced by the generation assets used for sharing. Energy does not necessarily have to be evenly divided between partners or members. The relative distribution key adds a second round to this process, and surplus energy is divided proportionally among sharing participants who have not yet consumed all the energy for each quarter-hourly period. The optimal sharing key uses continuous distribution until all energy is optimally distributed among sharing participants for a given quarter-hourly period.

As mentioned above, Article 1.1.3, 38°/1 of the Energiedecreet defines energy sharing as '*the free allocation over a single imbalance settlement period of all or part of the self-produced, and where applicable, stored energy injected into an electricity distribution network, the local transmission network for electricity, or a closed electricity distribution network between consumers*'. Energy sharing in Flanders thus cannot be conducted for a price.

Article 4.8.4., § 1, subparagraph 4 of the Energiedecreet states that '*[e]ach citizen energy community and each renewable energy community are financially responsible for the imbalances they cause in the electricity grid to the extent they were designated as access holders at their partners' or members' access points. They bear the balancing responsibility of their activities or charge a balancing person with that responsibility*'.

As provided in Section 6.1.2 of the Protocol, those participating in energy sharing must designate a manager ('*Beheerder van de Gemeenschap*') to interact with the DSO Fluvius in matters regarding energy sharing. The manager is defined as 'a natural or legal person and may be one of the participants in the sharing or sale of energy or a third party'.

4.4.3 Agreement Registration

As already discussed in Section 4.4.1, the establishment of a REC or CEC must be communicated to the Flemish Utility Regulator within 30 days (Article 4.8.3. of the Energiedecreet and Article 3.3.2 of the Energiebesluit) Article 4.8.3. of the Energiedecreet also obliges energy communities to notify the regulator VREG of all activities carried out and any change in these activities.

Regarding the activity of sharing within ECs, as per Section 6.1.1. of the Protocol, the sharing manager must register the community[42] wishing to share energy with Fluvius. The registration includes the steps of (1) choosing the community type: (2) providing the name, contact and details, Crossroads Bank for Enterprises (CBE) and Value Added Tax (VAT) number of the community if it is an EC; (3) registering the connections participating in sharing; (3) selecting the role of 'collection', 'injection' or 'collection and injection' for each connection; (4) selecting and configuring the sharing key; (5) acceptance of the terms of use.

Fluvius then sends a consent request to the energy sharing participants to confirm their nomination of the sharing manager. Subsequently, '*[t]he sharing or selling of energy starts*

[42] The Protocol uses the word *Gemeenschap* ('community'), but in the context of the protocol, this does not just refer to RECs and CECs, but to all possible sharing and indeed trading configurations (thus also JARSC, JAACs, and P2P trading). In Sections 4.4.3. and 4.4.5.-4.4.7., when we refer to community, we do so in the sense of the Protocol, and we use EC, REC, or CEC to denote the two types of energy communities established by EU law.

after all participants have answered, or at the latest 30 calendar days after registration, with the Participants who have given their mandate at that time via [the online portal] My Fluvius and if all legal conditions and the terms of use of the protocol (Chapter 5) are met'.

As per Section 6.5 of the Protocol, Fluvius performs a series of ex-ante tests before confirming the registration of the sharing agreement. These include the specifications and number of metering points and the generation assets (Section 6.5.1); the verification of the community members, including confirmation that each community member is not part of another sharing arrangement, has an agreement with a commercial energy supplier, that there are at least one injecting and one collecting participant, and that energy is not exchanged between participants located at the same connection (Section 6.5.2); and the verification of the sharing keys.

4.4.4 Operation

Flemish legislation does not provide for the right of CECs to manage distribution networks.

The DSO Fluvius plays a substantial role in facilitating energy sharing. It is the principal entity charged with drafting and implementing the Protocol for energy sharing in Flanders. As discussed in Section 4.4.3, Fluvius is the entity with which energy sharing agreements must be registered, and it takes the lead role in calculating and registering the results of energy sharing, moderating among the different actors involved in doing so, as explained in sections 4.4.5 and 4.4.6. Further, Article 4.1.8/2, 1°d) of the Energiedecreet specifies that, among the system operator's data management activities are '*settlements associated with peer-to-peer trading of green electricity quantities by one active customer to one other active customer and with energy sharing by active customers, citizens' energy communities or renewable energy communities*'.

Flemish legislation does not provide specific obligations on the energy supplier in relation to the operation of energy sharing. It should be noted, however, that the Protocol in Section 5.4 specifies that all participants in energy sharing must have a contract with a commercial energy supplier.

Regarding asset ownership, and as discussed in Section 3.4.8, Article 4.8.2., § 1, subsection 7 of the Energiedecreet mandates that RECs must own the production facilities, confirmed by Article 4.8.4., § 1, subsection 2, with regard to the activities, among them energy sharing, which a REC can carry out. Meanwhile, Article 4.8.4., § 1 of the Energiedecreet states that a CEC must be the owner *or have the user rights* of the production installations.

4.4.5 Calculating results

As already mentioned above, Article 4.1.8/2, 1°d) of the Energiedecreet specifies that, among the system operator's data management activities, are 'settlements associated with peer-to-peer trading of green electricity quantities by one active customer to one other active customer and with energy sharing by active customers, citizens' energy communities or renewable energy communities'.

Accordingly, the calculation of energy sharing results is performed by Fluvius and primarily dealt with in Section 6.2 of the Protocol. According to Section 6.2.1, quarter-hourly metering data will be retrieved every month for the period of the previous month. Estimates will be used if not all data are available. Fluvius then applies the sharing key and takes into account 'any

market scenarios that could have an impact on (the composition of) the community'. Section 6.2.2. of the protocol provides for corrections to the calculation that can be made in case the metering data changes or there are market scenarios with impact on the community.

After the calculation at the community level, Fluvius is also responsible for the settlement of energy sharing results. Specifically, according to Section 6.3.2 of the Protocol, Fluvius will calculate the totals of the energy exchanged for each individual market combination ('*marktcombinatie*'). A market combination is a combination of the parameters of:

- Supplier
- Equilibrium manager
- GAP (grid access provider, or Grid Operator)
- Energy direction (take-up or injection)
- Meter type (AMR or Digital meter in SMR3 regime)
- Type of local generation (solar, wind, ...)
- Timestamp (the indication of the 15' interval)

As per Section 6.3.3. of the Protocol, the FEBEG Reconciliation and Settlement Organisation (FeReSO), a foundation created by the Federation of Belgian Electricity and Gas Companies ('*Federatie van de Belgische Elektriciteits- en Gasbedrijven*') (FEBEG), is the organisation responsible for financial reconciliation in the context of energy sharing. Based on the data provided, FeReSO will calculate the financial balances for each market party, using an agreed reference price.

4.4.6 Registering results

Fluvius is responsible for the registration of energy sharing results and for making them available to the parties involved such as the energy sharing manager (Section 6.4.1 of the Protocol), the individual participants in energy sharing (Section 6.4.2 of the Protocol), the access holder (the individual members) (Section 6.4.3 of the Protocol), and FeReSo (Section 6.4.4 of the Protocol).

4.4.7 Settling the financial effects

There are no provisions dealing with a separate billing activity to be carried out by the energy communities. Article 3.2.18, 3° and §°/2 of the Energiebesluit set out the minimum billing requirements for energy suppliers.

Furthermore, Article 7.2.1, §1, subparagraph 5 confirms that 'energy sharing shall not affect the status of customer, household customer, protected customer or active customer and the associated rights, charges, taxes, surcharges and contributions'. Subparagraph 7 further specifies that '*[t]he measured energy at the access point shall not be modified by the energy allocated or exchanged in the exercise of [energy sharing] when calculating charges, taxes, surcharges and contributions, including contributions for public service obligations and certificate obligations*'. This is confirmed by Section 5.4 of the Protocol, which states that levies, taxes and surcharges are calculated based on gross metered volumes.

4.5 Energy Sharing in the Netherlands

Energy sharing in the Netherlands will be implemented through the new Energy Act, which is set to take effect in January 2026. The current Energy Act includes a limited version of energy sharing. To implement the 2024 reform of the EMD Directive, the Energy Act will be amended. The amendment proposal was published on 8 November 2024 and will serve as the basis for analysing the legal framework for energy sharing in the Netherlands[43].

Energy sharing is defined in Article 1.1 of the Energy Act as

> '*self-consumption by one or more active consumers of renewable energy:*
> *a. that is generated or stored by an installation located behind another connection which the active consumers jointly own, lease, or rent, in whole or in part; or*
> *b. to which the right has been transferred, whether free of charge or not, by another active consumer*'.

The conditions under which energy can be shared can be found in Article 2.30 and in Articles 2.30a, 2.30b, 2.30c and 3.63a.

4.5.1 Permitting and licensing

Both energy communities and active customers are eligible to share energy. The Energy Act speaks of an energy community ('*energiegemeenschap*') and refers to the governance structure of the energy community described in Articles 1.1 and 2.30 of the Energy Act.

Energy sharing takes place through the self-consumption of energy that is generated or stored by an installation located behind another connection, which the active consumer jointly owns, leases, or rents. The rules for permitting storage and generation installations vary depending on the size, type, and location of the installation, as well as the chosen technical solution and the environmental and spatial impact. The competent authority also depends on the size of the development. For very large projects, the national government or the province is typically the responsible authority. For smaller developments, this responsibility lies with either the province or the municipality.

For most installations, such as larger PV systems or small wind turbines, an environmental permit is required. Installing a small PV system on your own roof usually only requires notifying the grid operator. Rules may also vary between municipalities. In some cases, an adjustment or upgrade of the connection and transport agreement is needed.

[43] '*Wijziging van de Energiewet ter implementatie van het EU wetgevingspakket inzake het verbeteren van de opzet van de elektriciteitsmarkt van de Unie en de verbetering van de bescherming van de Unie tegen marktmanipulatie op de groothandelsmarkt voor energie, dd 8 november 2024*' (Amendment of the Energy Act for the implementation of the EU legislative package concerning the improvement of the design of the Union's electricity market and the enhancement of the Union's protection against market manipulation in the wholesale energy market, dated 8 November 2024).

For smaller home battery installations, no specific permits are required, provided the battery is certified and installed according to applicable standards. However, notifying the grid operator is mandatory for these smaller battery systems.

For larger batteries, such as containerised battery systems, an environmental permit is required. More detailed information on permitting stand-alone battery installations that are not located within buildings can be found in the 2024 *Guideline for Permitting Electricity Storage Systems*[44].
For both a battery and production installations connected to a new connection an agreement with the grid operator is required.
If the storage is situated underground, then the Mining Act may also apply [24].

4.5.2 Contracting

Under the current Energy Act Article 2.30 § 1 subsection a requires that the active consumers of the energy community enter into an agreement with the energy supplier that facilitates energy sharing. In addition, all active consumers that participate in the energy sharing will have a supply agreement with that same energy supplier, subsection b of the same Article.

Under the proposed implementation of the EMD reform, the requirement to have an agreement with the same energy supplier will no longer apply, Article 2.30 § 1 Proposal EMD reform. Instead, energy suppliers serving the connections participating in a sharing scheme will be informed of the arrangement through the registration of the energy sharing agreement, Article 2.30c § 1. According to the current proposal, the grid operator responsible for calculating the shared energy will provide the results once per month to the relevant market participants and BRPs active on the connections involved in the sharing scheme, Article 3.63a § 4 Proposal EMD reform.

Energy sharing is based on an energy sharing agreement, as defined in Article 2.30 §3 Proposal EMD reform. This agreement specifies a fixed percentage of the electricity injected into the grid by the supplying party during each imbalance settlement period. Since the imbalance settlement period is 15 minutes, the contract will define a fixed percentage for each 15-minute interval. The shared energy is calculated as a percentage of the electricity injected into the grid by the ‘energy giver’ and allocated to the ‘energy receiver’. Any portion of this allocated energy that is not consumed by the receiver during the imbalance settlement period will be treated as a virtual return delivery. This means it will be accounted for as if it were produced behind the meter of the receiving party.

As a result, the receiving party effectively becomes a virtual producer of the unused portion of shared energy. For this amount of electricity, the receiver will receive a feed-in tariff or compensation from their energy supplier, Article 2.30 § 4 Proposal EMD reform. Moreover, the energy sharing receiver has the right to supply or 'sell' this electricity to their energy supplier, Article 2.30 § 5 Proposal EMD reform.

[44] Handreiking vergunningverlening elektriciteitsopslagsystemen, In opdracht van het Ministerie van Economische Zaken en Klimaat, 2024

Sharing keys can be adjusted. The grid operator needs a minimum of one working day to adjust them[45].

The BRP of the supplier is BRP on the connection. If the sharing incurs any costs, market participants affected by the sharing can charge reasonable costs, as per Article 2.30b § 1. However, the market participant may not limit the active consumer from entering into an energy sharing agreement, Article 2.30 b § 2 Proposal EMD reform.

Energy sharing can be facilitated by an 'energy sharing organiser' (Article 2.30c § 2 and 3 Proposal EMD reform). Further provisions governing the facilitation of energy sharing by an energy sharing organiser shall be determined by or pursuant to a general administrative decree, Article 2.30c § 3. If there is an appointed organiser, the organiser registers the agreement with the grid operator's contact point and can additionally take on various other responsibilities related to energy sharing, such as acting as the main point of contact, assisting in defining the sharing keys, and managing the associated administrative processes (Articles 2.30c § 2 and 3.63a).

4.5.3 Agreement Registration

The energy sharing agreement is registered. Energy sharing can be facilitated by an energy sharing organiser. This is not mandatory. However, there must be an appointed contact connected to the sharing agreement. This contact person, whether the organiser, an active customer or an energy community, is responsible for registering the agreement as specified in Article 2.30c §1 with the grid operator's contact point, Article 3.36a §1 Proposal EMD reform. The grid operator is responsible for providing this point of contact and registering the agreement in accordance with Article 4.5 of the Energy Act. That Article requires the grid operator to register the different market participants active on the connection, such as the BRP, supplier, aggregator, etc, and the relevant contracts and installations connected to the connection.
The contact person (whether this is the organiser, active consumer or a representative of the energy community) will need to provide information on the connections involved, sharing keys, installed capacity, type of production unit, and the contract period. The energy sharing giver must also provide consent for sharing consumption data with the supplier and BRP of the energy sharing receiver, Article 4.8 § 8 Proposal EMD reform.

4.5.4 Operation

The DSO is responsible for monitoring, collecting and validating the energy sharing data per the imbalance settlement period, Article 3.63a § 3 Proposal EMD reform.

The supplier (P2P trader) and BRP are obligated to allow the connected customer to share energy, Article 2.30b § 2 Proposal EMD reform. However, a market party can charge

[45] Explanatory Memorandum, Memorie van Toelichting bij Wijziging van de Energiewet ter implementatie van het EU wetgevingspakket inzake het verbeteren van de opzet van de elektriciteitsmarkt van de Unie en de verbetering van de bescherming van de Unie tegen marktmanipulatie op de groothandelsmarkt voor energie, p. 18. Dd. 8 November 2024

reasonable costs if the energy sharing incurs extra costs, Article 2.30b §1 Proposal EMD reform.

Whether the electricity grid is owned by an energy community or not is not relevant for energy sharing in the Netherlands. All networks are operated by publicly owned companies. Energy communities are not allowed to own electricity networks. This is different in relation to heat communities. A heat community is required to own the network if it is designated as the heat company. Only a party that owns the network can be appointed as a heat company. This applies to both large and small systems. For more information, see 3.5.8 on asset ownership.

4.5.5 Calculating results

The grid operator is in charge of monitoring, collecting, and validating the data per the imbalance settlement period, Article 3.63a § 3 Proposal EMD reform. The grid operator in charge also calculates the amount of energy that has been shared per 15 minutes and provides the calculation and the accompanying feed-in and take-off data to the point of contact of the energy sharing parties, the other market participants, including the BRP, that are active on the connection (accounting point) Article 3.63a § 4 Proposal EMD reform. These data are provided at least once a month by the grid operator.

The Energy Act requires a separate allocation point (metering point) for additional activities. If a connected party would like to contract an extra supplier (second supplier) or an aggregator for the electricity they feed in, then the Energy Act requires a second allocation point at the connection. The law requires that for each allocation point, there is a market party active on the allocation point and a BRP (Articles 2.2 § 1 subsection b) and 1.1 Energy Act). This is not the case for energy sharing. The sharing happens at the same accounting point as the supply. No additional points are required. The law does require that there is an agreement between the supplier/ BRP and the sharer on the allocation/ accounting point (Article 2.30b proposal EMD reform).

4.5.6 Registering results

The point of contact is responsible for registering the sharing agreement and the grid operator is responsible for making the calculation, registration of the results and sharing the outcomes with the market parties above (Article 3.63a § 4 proposal EMD reform).

4.5.7 Settling the financial effects

In the Netherlands, energy sharing is considered a form of energy supply. The connected customer may receive separate bills, one from the supplier and one for the shared energy. The law does not require these to be combined into a single integrated invoice.

The receiver of energy sharing is taxed in the same way as if the energy had been directly supplied. In the Netherlands, the supplier is responsible for collecting these taxes. To prevent active customers, energy communities, or organisers of energy sharing from becoming involved in tax collection, this responsibility has been assigned to the supplier connected to the receiving party. As a result, the supplier collects taxes both for the energy it supplies and for the energy shared by another party, in accordance with Article 50, paragraphs 2 and 3 of

the Environmental Taxes Act (‘*Wet Belastingen op Milieugrondslag*’) and the proposed EMD reform.

The supplier or BRP is also allowed to charge for reasonable incurred costs. These costs may include additional administrative fees or imbalance costs. Both the incurred costs and the applicable energy taxes can either be included in the main supply bill or charged separately. If the supplier does not charge any incurred costs, the energy taxes may be included in the final bill, in accordance with Article 56, paragraph 3 of the Environmental Taxes Act (‘*Wet Belastingen op Milieugrondslag*’) and the proposed EMD reform.

In the Netherlands, small connected customers pay a connection fee based on the size of the connection, not on how the connection is used (transport demand etc). As long as the connection tariff structure remains unchanged, energy sharing has no impact on the connection fee. This fee is included in the supply bill. In addition to the incurred costs, taxes, and the shared energy itself, the sharing partners may also be required to pay the energy sharing organiser.

The current proposal does not include rules that specify the structure of the invoice for sharing. However, there are rules that specify the supply invoice. The regulations concerning invoicing are set out in the Decree on Energy Invoicing, Consumption Data, and Indicative Cost Overview (‘*Besluit factuur, verbruiks- en indicatief kostenoverzicht energie*’).

5. Peer-to-peer trading

Since the introduction of the definition of 'Peer-to-Peer (P2P) trading' through the RED II, P2P trading has garnered significant attention in EU policy and scholarship. Still, there is some degree of conceptual confusion between what conveys energy sharing and P2P trading. In other words, it is common to see non-legal Articles using the terminology of P2P trading to refer to activities that fall into the legal definition of energy sharing or collective self-consumption. This is not the case most time, despite some exceptions.

As above-mentioned in Section 2.2.4, P2P trading is a sales contract with pre-determined terms and conditions. Based on the interpretation of EU law, P2P trading is a distinctive mode of exchanging energy compared to energy sharing or collective self-consumption. As it will be discussed in the sections below, in some member States, P2P trading has been transposed into the national law as a distinctive contractual mechanism to sell the surplus of energy (see sections 5.2 and 5.3). In contrast, in other Member States, provisions of P2P trading have been transposed with a more intertwined definition of energy sharing (see Section 5.5)

The distinction between P2P trading and energy sharing is critical for defining the applicable rules in mapping the legal and regulatory framework. Certain rights and obligations—such as licensing, taxation, levies, balancing responsibilities, and restrictions on facilitation by DSOs and suppliers—that are applied to energy sharing do not apply to P2P trading, which is a different activity by nature. Accordingly, this report adheres to the legal definition of P2P trading as a sales contract under EU law, as implemented by Member States, and treats it separately from energy sharing.

5.1 Peer-to-peer trading at the EU level

The definition of P2P trading has been introduced into the EU legal order through the CEP in 2018, more precisely in the RED II. Article 2(18) of the Renewable Energy Directive[25] provides that:

> 'peer-to-peer trading' of renewable energy means the sale of renewable energy between market participants by means of a contract with pre-determined conditions governing the automated execution and settlement of the transaction, either directly between market participants or indirectly through a certified third-party market participant, such as an aggregator. The right to conduct peer-to-peer trading shall be without prejudice to the rights and obligations of the parties involved as final customers, producers, suppliers or aggregators (see also Table 2.3).

In the view of the EU legislator, P2P trading is thus distinct from other forms of energy sharing, but not by virtue of the exchange of money. P2P trading is a sales contract, while energy sharing is a form of collective self-consumption that does not constitute a sales agreement, despite being performed for free or for a price, as discussed in Chapter 4.

As is apparent from the definition in the RED II, P2P trading applies to a very broad spectrum of actors [26]. One need merely be a 'market participant' to engage in P2P trading. P2P trading is explicitly mentioned in Article 21(2)(a) as one of the ways in which renewables self-consumers should be able to sell the surplus renewable electricity. This provision can be

interpreted as renewable self-consumers, individually or collectively as JARSCs, can sell the surplus renewable electricity after calculating the self-generation and deducting from it the self-consumption.

Different to Article 21 of RED II, Article 22 on renewable energy communities makes no reference to P2P trading as an enabled activity of REC. Therefore, it is for the Member States to determine whether P2P trading is an activity relevant to the EC. As this report explains below, for the Member States that enable ECs to operate collective self-consumption, P2P trading is then relevant.

Another interesting feature of P2P trading is that the EU legislator refers to it as a 'contract with pre-determined conditions governing the automated execution and settlement of the transaction'. The RED II does not provide more detail as to the precise kind of automated contractual arrangement required for a transaction to be considered P2P trading. Some authors conclude that the legislation limits P2P trading to contractual relationships taking the form of so-called smart contracts[27, p. 2]. These types of contracts have only recently been defined in law by Article 2(39) of the EU's Data Act (Regulation (EU) 2023/2854) as:

> '*a computer program used for the automated execution of an agreement or part thereof, using a sequence of electronic data records and ensuring their integrity and the accuracy of their chronological ordering.'*

5.2 Peer-to-peer trading in Italy

Italy transposes the definition of P2P trading of renewable energy exactly as contained in EU law into national law through Article 2(1)(s) of Decreto Legislativo 199 of 2021 as '*scambi tra pari di energia rinnovabile*'. Unlike in the Renewable Energy Directive, however, P2P trading is not mentioned specifically in connection with renewables self-consumers. The transposition of Article 21 of the Renewable Energy Directive in Article 30(1)(b) of the Decreto Legislativo 199 of 2021 merely mentions the right of renewables self-consumers to sell excess energy. Article 30(2)(d), which specifically addresses JARSCs, explicitly mentions the use of PPAs for JARSCs but again does not mention P2P trading. In regulation, neither the CACER nor the TIAD contain specific rules for P2P trading.

P2P trading in Italy should be distinguished from two other innovative means of injecting energy into the grid available to active customers in Italy. Under the '*ritiro dedicato'* scheme,[28] an active customer can sell energy directly to the GSE at a fixed price (see also Sections 4.2.1 and 4.2.5 above). The '*scambio sul posto'* option is a net metering scheme, allowing active customers to inject self-produced energy and to virtually 'use' it at a later time, thus using the electricity system as virtual storage.[29] The '*scambio sul posto'* scheme stopped accepting new applications in May 2025.[30] Neither '*ritiro dedicato* nor *scambio sul posto'* seem to conform to the definition of '*scambi tra pari di energia rinnovabile'*.

5.3 Peer-to-peer trading in Portugal

Portugal transposes the definition of P2P trading of renewable energy exactly as contained in EU law into national law through Article 3(o) of Decree-Law n. 99/2024 as '*comercialização entre pares*'.

The Decree-law n. 15/2022 includes references to the P2P trading in two different provisions. The first concerns the rights and obligations of active customers ('*autocomsunidor*'). Article 88(1)(e) establishes that active customers have the right to '*trade surplus energy from production for self-consumption through electricity markets, namely organised markets, bilateral contracts or P2P trading schemes, either directly or through third parties*'. The second reference to P2P trading, and more relevant for this report, is found in the provision listing the legally enabled activities of ECs. Article 189(1)(b) established that RECs are legally enabled to 'share ('*partilhar*') and trade ('*comercializar*') among its members the renewable energy produced by UPAC at its service, in compliance with the other requirements set out in this Article, without prejudice to the members of the CER maintaining their rights and obligations as consumers'. Under the assumption that 'trading among their members' refers to P2P trading, one could conclude that ECs could facilitate P2P trading among their members (see Section 3.3.7). However, there are some important considerations to be made when Article 189(1)(b) is interpreted systemically with other legislative and regulations.

First, the reading of Article 88(1)(e) and Article 189(1)(b) of Decree-law n. 15/2022, as described above, brings us to conclude that, like EU law, Portuguese law distinguishes the activities of P2P trading from energy sharing, where the latter is a collective self-consumption. The former, instead, is the sale of renewable energy surplus produced by UPACs, which can be done via ECs when the UPACs are in service.

Second and most important, the Regulamento n. 815/2023 issued by ERSE approves important rules to specify when P2P trading must take place, in the context of Chapter II, dealing with Commercial relations in the field of self-consumption. Article 8(7)(c) specifies that P2P trading is one of the means through which the surplus from self-consumption can be traded, alongside sale through an aggregator (subparagraph a) or directly on the market or via a bilateral contract (subparagraph b). This regulatory provision has reinforced the distinctions between P2P trading and energy sharing as two distinct activities.

In ECs operating with collective self-consumption (ACC), the sale of energy surplus occurs only after the DSO calculates the energy sharing, which happens every 15 minutes. Only when there is an energy surplus after the sharing calculation, then this surplus can be sold via P2P trading. In this case, the EGAC (whether the role is taken by an EC or a delegated third party) is responsible for signing the sales contract with the aggregator or a commercial contract directly. If it is done through an aggregator, the EGAC/EC could sign a contract with any aggregator. Nonetheless, as an alternative, the Portuguese legislation designates an aggregator of last resort ('*Comercializador de último recurso – CUR*') to purchase the surplus of UPACs with connection capacity attributed ('*potência de ligação atribuída*') up to 1MW (Article 287 Decree-Law n. 15/2022) [17]. In this case, Article 288(5) of Decree-Law establishes that the price paid by the CUR to the surplus of energy is based on the following calculation:

$$Rm_{i,m} = En_{i,m} \times Pr_{MIBEL-PT,m} - Enc_{i,m}$$

a) '$Rm_{i,m}$' is the remuneration for the electricity supplied to RESP by producer *i* in month *m*, in kWh;
b) '$En_{i,m}$' is the electricity supplied to RESP by producer *i* in month *m*, in kWh;
c) '$Pr_{MIBEL-PT,m}$' is the simple arithmetic mean of the hourly closing prices of the daily market, affecting the Portuguese area of MIBEL, published by the Iberian Market

Operator, Spanish hub, adjusted to the production profile of producer *i*, for month *m*, in €/kWh;
d) '$Enc_{i,m}$' means the charges, as defined by ERSE, incurred in representing producer '*i*' on the market, namely deviations from the schedule due to participation in the Portuguese area of MIBEL, network access tariffs and other charges, relating to month *m*, in €;
e) 'm' is the month to which the metering of the electricity supplied to RESP by producer '*i*'.

Last but not least, P2P contracts are subject to the Commercial Relations Regulations for the Electricity and Gas Sectors (RRC) (Regulamento n. 827/2023). Here, Article 240(1)(f) specifies that P2P contracts are one of the recognised contract modalities in the energy retail market. The RRC here provides a broad definition of P2P trading contracts as: 'contracting within the perimeter of any market agent or between any market agents, without prejudice to the payment of charges for the use of networks that are due, where applicable, by the consumption or self-consumption facilities involved'.

5.4 Peer-to-peer trading in Belgium (Flanders)

In Flanders, the definition of P2P trading is transposed in Article 1.1.3., 97°/0/1 of the Energiedecreet as *'peer-to-peerhandel in hernieuwbare energie*'. The definition is phrased exactly as in the Renewable Energy Directive, except that the Energiedecreet defines P2P trading as taking place between active customers as opposed to market participants mentioned in EU law.

Article 4.4.2. of the Energiedecreet supplements this definition, providing that 'any customer connected to an electricity distribution network, the local transmission network of electricity, a closed distribution network of electricity, a heat or cooling network' can become an active customer through a range of activities including under point 6° by engaging in P2P trading. None of the activities listed in Article 4.4.2. can be the primary commercial or professional activity of the active customer. The energy that can be used for P2P trading, as per point 1° must be produced by the active customer 'either at its own residence or establishment unit, or through a direct line that crosses the boundaries of their own site, where the production facilities are connected directly or indirectly via the active customer's connection to an electricity distribution network, the local transport network of electricity, a closed distribution network of electricity or a heat or cold network'.

Article 7.2.2. of the Energiedecreet is most specifically concerned with P2P trading. Provided that P2P trading does not constitute their main commercial or professional activity, it establishes the right of active customers to engage in P2P trading regarding the renewable energy which 'they have produced themselves and injected into the electricity distribution network, local electricity transmission network, closed electricity distribution network or heat or cooling network'. Reiterating the definition of P2P trading, Article 7.2.2. states that '*[t]he right to engage in peer-to-peer trading does not affect the rights and obligations of the parties involved as final customers, producers, suppliers or aggregators*'. § 2 clarifies that the active customer engaging in P2P trading may sell 'green' electricity which they have produced and potentially stored for each imbalance settlement period '*to one other active customer up to the amount of the offtake of that other active customer at his access point*'. Supplier obligations under Article 4.3.1., § 1 (supply license), Article 4.3.2 and Article 7.5.1, §1 (both dealing with

public service obligations) of the Energiedecreet do not apply in this case. The Energiedecreet specifies in Article 7.2.2., §2, subparagraph 2 that 'when exercising [P2P trading], the holder of the access point shall always designate an access holder at the access point. That access holder can under no circumstances be the system operator'.

P2P trading should not '*affect the status of customer, household customer, protected customer or active customer and the rights, charges, taxes, surcharges and contributions attached thereto*'. This includes the charges for green and cogeneration certificates as detailed in Articles 7.1.10 and 7.1.11. As with energy sharing, energy delivered through P2P trading should not change the energy measured at the access point for the purposes of '*calculating the charges, taxes, surcharges and contributions, including contributions for public service obligations and certificate obligations*'. Article 7.2.2., § 3 empowers the Flemish Government to adopt more detailed rules regarding P2P trading as outlined in § 2, specifying that '*the rules shall relate to the minimum provisions of the agreements concluded between the parties involved, including the recording of necessary data, including metering and measurement data, and the conditions with which the methodologies for calculating energy quantities for allocation, reconciliation, invoicing, and adjustments to such calculations must comply*'. The Government is also responsible for determining the phasing and timing of operationalising P2P trading. Additionally, it should be noted that Article 4.2.1. tasks the regulator with drawing up the technical regulations for the management of the electricity distribution networks, including the rules for suppliers and network operators for P2P trading under Article 7.2.2. Article 4.1.8/2 d) of the Energiedecreet explicitly lists 'settlements associated with peer-to-peer trading of green electricity quantities by one active customer to one other active customer' as one of the data management activities on the distribution network.

The Technical Regulations for the Distribution of Electricity in Flanders (TRDE) provide more detailed requirements for P2P trading in Articles 4.3.64 and 4.3.65. It should be noted that these are the same provisions that outline the conditions for the Protocol which is also applicable to energy sharing in ECs and discussed in Section 4.4, and especially Sections 4.4.2, 4.4.3, 4.4.5, 4.4.6, 4.4.7. P2P trading and energy sharing are thus largely following the same procedure, but are yet distinct modes of exchanging energy. Article 4.3.64 of the TRDE establishes in § 1 that the electricity distribution system operators and the access holders as well as the parties involved in P2P trading of green electricity and the third parties involved as per law must communicate the framework for energy sharing and P2P trading of green electricity according to a protocol. According to paragraph 2, the minimum issues that should be regulated by the protocol are: (1) the identification of allocation points involved in energy sharing or P2P trading of green electricity, and changes thereto; (2) the registration of the mandated third party in energy-sharing or P2P trading of green electricity, at the allocation points referred to under (1), and changes thereto; (3) the notification of the registration or changes mentioned under (2) to the access holders at the relevant allocation points, and to the impacted balance managers or flexibility service providers; (4) the determination and application of the distribution keys by which the injection, available for energy sharing or P2P trading of green electricity, is divided among one or more customers, and changes thereto; (5) the exchange of metering data associated with energy sharing or P2P trading of green power with the mandated third party and access holders and, where applicable, with flexibility service providers, and, if the allocation is adjusted with this protocol, with the balancing managers; (6) any record of adjustments to the methodology of allocation and reconciliation following energy sharing or P2P trading of green electricity; (7) any adjustments to the allocation and reconciliation data of the access holders and their balancing managers, and, if they themselves are involved in the allocation or reconciliation, communication about the allocation and reconciliation with the mandated party or parties; (8) the error reporting procedure, if in the

data exchanged according to points (2) – (7) errors are identified by one of the parties involved, which after verification leads to prompt adjustment. As per § 3, the DSO should draw up the protocol, following a procedure for stakeholder consultation, approval by the regulator, information provision and amendments as detailed in §§ 3 - 10.

With regard specifically to P2P trading, Article 4.3.65 of the TRDE provides that the protocol for energy sharing and P2P trading must ensure that P2P trading can begin and end at the latest one month after the DSO had received a request to that effect. The other minimum guarantees specified here pertain to energy sharing as per Article 7.2.1. of the Energiedecreet. As per § 2, the Protocol must also ensure that customers are notified of the applications that will actually lead to the inclusion of the customer registered at the allocation point in the system of energy sharing or P2P trading. Per § 4, the DSO is required to provide a guideline for entities that may be nominated as third parties in P2P trading. The guideline must as a minimum detail the checks that these parties can perform when interacting with a party wishing to engage in P2P trading. These checks ensure (1) technical eligibility: and (2) accuracy of the data they have provided during registration for P2P trading. For the purposes of allocation and reconciliation of energy that may be affected by P2P trading, § 5 states that the protocol must ensure that:

- Adjusted data is provided to the relevant BRPs and the TSO;
- Final allocation is carried out within the timeframe specified in TRDE Article 4.3.37 paragraph 4 (the first working day of the sixth month following the month for which the energy quantities are allocated);
- The final reconciliation is completed within the period set out in TRDE Article 4.3.40 paragraph 4 (no later than 37 months after the month concerned on the basis of the history of the access register for those months)
- Information as to volumes assigned during allocation or reconciliation is provided to customers engaging in P2P trading and third parties carrying out the activity, on equal terms with BRPs and access holders.

As per Section 5.4 of the Protocol, the number of participants for P2P trading is limited to exactly 2, confirming the definition in Article 7.2.2., § 2 of the Energiedecreet.

The Protocol follows the same steps as for energy sharing in ECs with regard to agreement registration, calculation and registration of results as discussed in Sections 4.4.3, 4.4.5 and 4.4.6. above. Sharing keys cannot be specified for P2P trading as per Section 6.5.3 of the Protocol.

5.5 Peer-to-peer trading in the Netherlands

Peer to peer trading has been transposed in the Energy Act (Energiewet). A definition is found in Article 1.1: ‘delivery of renewable electricity produced by an active consumer to a final consumer, under predetermined conditions for the automatic execution and settlement of that delivery, either directly or through the market participant who carries out the automatic execution and settlement’. The law distinguishes two types of peer-to-peer trading: (1) direct peer-to-peer trading and (2) peer-to-peer trading facilitated by a market participant.

Peer-to-peer trading is limited to the amount of electricity that is produced in a year: ‘a supplier that facilitates peer-to-peer trading shall ensure that the amount of electricity supplied to end users under peer-to-peer supply agreements concluded by the supplier over the course of a

year does not exceed the amount of electricity returned by active customers under peer-to-peer return agreements concluded by the supplier in that same year' (Article 2.5 § 4).

Peer-to-peer trading happens via a peer-to-peer supply contract ('*leveringsovereenkomst inzake peer-to-peer-handel*'), Article 2.6 § 2. Peer-to-peer trading is expected to be most of the time facilitated by a so-called supplier that *facilitates peer-to-peer trading*, Article 1.1 Energy Act. The facilitator of peer-to-peer trading is a market participant, Article 1.1 Energy Act. Peer-to-peer trading follows most of the rules that also apply to 'supply'. Including the obligation to have a supply licence to supply small connected customers ('*kleine aansluiting*': max 3x 80 A) Some obligations do not apply, such as the requirement to always provide an offer when a customer with a small connection requests a contract, Article 2.22 Energy Act. If peer-to-peer trading happens directly between an active customer and a final customer, then a supplier license is not required, Article 2.17 § 2 b.[46]
In the Netherlands, peer-to-peer trading is classified as a form of electricity supply. A lighter regulatory regime applies to facilitators of peer-to-peer trading, and active consumers directly involved in such trading may supply electricity without requiring a supplier license.

Energy communities can facilitate peer-to-peer trading in the Netherlands. Most of the supply regulations also apply to energy communities involved in such trading.

However, the Energy Act includes a specific exemption from the supplier license requirement for energy communities. This means that they are allowed to supply electricity to their members without a license, provided they meet conditions set by Article 2.17 § 2 subsection a (1,2,3):

1. the energy community does not supply more electricity or gas over the course of a year than it feeds into the system on an annual basis;

2. the supply is made to end users with a small connection who are members or shareholders of the energy community; and

3. the energy community does not have more members or individual shareholders than a number to be determined by ministerial regulation.

The first two conditions stipulate that the community may not supply more than it generates annually, and that supply is limited to its members or shareholders. These requirements closely resemble those for peer-to-peer trading. One could therefore argue that a community supplying its own members is, in essence, facilitating peer-to-peer trading.

Finally, the law allows for a limit to be set on the number of members or shareholders an energy community can have. If a community grows too large, it may still facilitate peer-to-peer trading, but it will no longer qualify for the exemption and will be required to obtain a supplier license.

[46] There is another exemption in the law specially made for peer-to-peer trading between a group of final customers that are part of a company and they are at an organizational level, technical or functional level cooperating. This is a derogation for so-called multi-sites in which a company might also represent some smaller affiliated connections. Explanatory memorandum Energiewet, Kmst II, 2022-23, 36378 nr. 3, p. 249

6. Conclusions

6.1 Summary

Mapping law and regulation applicable to the development of consumer-centric models for energy sharing and P2P trading within ECs is relevant to identify the rules that enable these activities at the EU level and its Member States. These rules enshrine rights and obligations of governmental institutions and market actors, which then determine the distribution of roles and responsibilities in energy sharing and P2P trading within ECs. Identifying how the legal and regulatory framework allocates roles and responsibilities among different market actors is crucial for developing methods, open-source tools, and platforms that comply with the law.

Although EU law has imposed on Member States the obligation of enabling ECs and granted them minimum standards of legally enabled activities, Member States retain a considerable range of discretion to transpose rules by adapting their measures to the national context. These adaptations lead to divergences and convergences inherent to the minimum harmonisation of EU Directives. By adapting rights and obligations, national laws have indeed diverged on the allocation of roles and responsibilities.

The first step in mapping the divergences and convergences of legal and regulatory frameworks, departing from EU law as a reference point for a transnational legal order and considering the transposition of Directives in Member States, is the development of a holistic analytical framework to ensure a coherent, consistent, and replicable comparative law approach. In this report, the developed analytical framework is an output, per se. It defines variables to be investigated in national law, distinguishing rules shaping governance of ECs from rights and obligations intrinsic to the activities of energy sharing and P2P trading.

While a more in-depth comparative analysis based on this mapping is needed, the main conclusion of the report is that Member States have indeed transposed EU Directives, in particularly the EMD and RED II, concerning ECs and their activities of energy sharing and P2P trading with some differences, leading to divergences in the distribution of roles and responsibilities. Measuring the degree of divergences and convergences between national laws, as well as how these divergences promote or act as barriers to the scalability of energy sharing and P2P trading within ECs, requires a different method that goes beyond mapping the legal and regulatory framework. These are outputs that are to be allocated to separate deliverables.

This report has also added value to the existing discussion of energy sharing and P2P trading in ECs by including the provisions of the recently-introduced right to energy sharing under Article 15a of Directive (EU) 2024/1711 as part of the mapping of EU law on EC governance (section 3.1) and sharing (section 4.1). This will form the basis of future analysis of how Article 15a of the EMD, which needs to be transposed by member states, could impact and interact with the divergences and convergences in national implementation of sharing and P2P trading in ECs.

6.2 Progress

This report has been focused on mapping legal and regulatory rules based on a comparative law methodology, taking into account the rules in the EU legal order and four Member States. The next step involves comparing these national provisions to identify the regulatory design that is more efficient and effective in enabling the activities of energy sharing and P2P trading within ECs. This will serve as the starting point for T6.4/D6.4, which aims to propose policy recommendations.

6.3 Main Challenges

Initially, the D1.1 was designed to have the legal and regulatory framework analysed based on the analytical framework derived from the harmonised activity list. The primary challenge of this report has been expanding the legal analysis to a broader analytical framework, encompassing phases before and after the operation of energy sharing.

While mapping the legal and regulatory framework, other challenges have been identified, such as the use of different terminologies in various languages. The use of different terminologies may lead to confusion, such as the use of the term "supply" instead of "collective self-consumption" or "sharing."

6.4 Next deliverables

The output of D1.1. will serve as a starting point for WP6, more precisely T6.4, where policy recommendations for legal and regulatory reforms will be taking shape according to the output of the U2Demo project.

7. References

[1] Directorate-General for Energy (European Commission) *et al.*, *Report on energy sharing*. Publications Office of the European Union, 2025. Accessed: Sept. 01, 2025. [Online]. Available: https://data.europa.eu/doi/10.2926/8653694

[2] M. Siems, *Comparative Law*, 3rd ed. Cambridge University Press, 2022. doi: 10.1017/9781108892766.

[3] M. Van Hoecke, Ed., *Methodologies of Legal Research: Which Kind of Method for What Kind of Discipline?* in European Academy of Legal Theory monograph series. Oxford Portland, Or: Hart, 2011.

[4] Vlaamse Codex, "Decreet houdende algemene bepalingen betreffende het energiebeleid." Accessed: July 29, 2025. [Online]. Available: https://codex.vlaanderen.be/Zoeken/Document.aspx?DID=1018092&param=informatie

[5] A. Ross, "Legal Method (Interpretation)[156]," in *On Law and Justice*, Oxford University Press, 2019, pp. 127–185. doi: 10.1093/oso/9780198716105.003.0004.

[6] L. Duarte d'Almeida, "Legal Statements and Normative Language," *Law Philos.*, vol. 30, no. 2, pp. 167–199, Mar. 2011, doi: 10.1007/s10982-010-9089-3.

[7] P. M. Tiersma, "Language of Legal Texts," *Encyclopedia of Language & Linguistics*. Elsevier, 2006.

[8] R. S. Summers, *Form and Function in a Legal System – A General Study*. Cambridge: Cambridge University Press, 2005. doi: 10.1017/CBO9780511511066.

[9] A. Colombi Ciacchi and D. Von Der Pfordten, "Exploring the relationship between law and governance: a proposal," *Theory Pract. Legis.*, vol. 11, no. 2, pp. 151–167, May 2023, doi: 10.1080/20508840.2023.2215657.

[10] A. Colombi Ciacchi, "European Fundamental Rights, Private Law and Judicial Governance," in *Constitutionalization of European Private Law*, H.-W. Micklitz, Ed., Oxford University Press, 2014, pp. 102, 124.

[11] European Commission Directorate General for Energy. *et al.*, "Multi-Supplier Models and Decentralized Energy Systems: Energy Sharing Approaches," European Commission, 2023. Accessed: Sept. 13, 2024. [Online]. Available: https://data.europa.eu/doi/10.2833/730792

[12] USEF, “USEF - The Framework Explained,” May 2021. Accessed: July 29, 2025. [Online]. Available: https://www.usef.energy/app/uploads/2021/05/USEF-The-Framework-Explained-update-2021.pdf

[13] J. Roberts, “Power to the people? Implications of the Clean Energy Package for the role of community ownership in Europe’s energy transition,” *Rev. Eur. Comp. Int. Environ. Law*, vol. 29, no. 2, pp. 232–244, 2020, doi: 10.1111/reel.12346.

[14] B. Hoops, “EU Directives on the internal governance of energy communities and their exclusionary effects,” *J. World Energy Law Bus.*, vol. 17, no. 3, pp. 147–167, June 2024, doi: 10.1093/jwelb/jwae001.

[15] C. Favilli, “Transizione ecologica e autoconsumo organizzato di energia rinnovabile. La questione della forma giuridica delle comunità energetiche,” *Responsab. Civ. E Previd.*, vol. 2, p. 385, 2023.

[16] ADENE, DGEG, and Ministério do Ambiente e da Ação Climática, “Autoconsumo e Comunidade de Energia Renovável: guia legislativo,” 2022. [Online]. Available: https://www.adene.pt/wp-content/uploads/2022/11/Manual-Digital-Autoconsumo-e-Comunidade-de-Energia-Renovavel-Guia-Legislativo.pdf

[17] ADENE and eREDES, “Guia explicativo do autoconsumo,” 2025. [Online]. Available: https://www.e-redes.pt/sites/eredes/files/2025-07/Guia_Explicativo_do_Autoconsumo.pdf

[18] VREG, “Rapport - 7/05/2024 - Energiegemeenschappen, energiedelen en energie verkopen,” VREG, July 2024. [Online]. Available: https://www.vlaamsenutsregulator.be/sites/default/files/document/rapp-2024-10.pdf

[19] Energy Community Repository, “Energy sharing for energy communities: a reference guide,” 2023. [Online]. Available: https://build-up.ec.europa.eu/en/resources-and-tools/publications/energy-sharing-energy-communities-reference-guide

[20] M. Bilardo, “A fair dynamic incentive allocation method for virtual energy sharing in renewable energy communities that rewards members’ virtuosity and engagement,” *Renew. Energy*, vol. 255, p. 123756, Dec. 2025, doi: 10.1016/j.renene.2025.123756.

[21] E.DSO, “DSOs as facilitators of Energy Communities. Position paper,” 2021. [Online]. Available: https://www.edsoforsmartgrids.eu/content/uploads/2024/05/E.DSO-Position-Paper-on-Energy-communities-FINAL.pdf

[22] CEER, “Regulatory and Consumer Considerations for Decentralised Energy Opportunities Report,” 2025. [Online]. Available: https://www.ceer.eu/wp-content/uploads/2025/03/DS_CRM-FInal-1.pdf

[23] S. Anciaux and J. Tallat-Kelpšaitė, “Technical Support for RES Policy Development and Implementation – Simplification of Permission and Administrative Procedures for RES Installations (RES Simplify) – Belgium,” RES Simplify.

[24] E. Winters, H. Puts, J. Van Popering-Verkerk, and M. Duijn, “Legal and societal embeddedness of large scale energy storage,” 2020. [Online]. Available: https://publications.tno.nl/publication/34637697/eL5JsC/TNO-2020-R11116.pdf

[25] *Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the Promotion of the Use of Energy from Renewable Sources, OJ L382/82*.

[26] L. De Almeida, V. Cappelli, and N. Van Soest, “Peer-to-peer trading and energy community in the electricity market : analysing the literature on law and regulation and looking ahead to future challenges,” 2021. Accessed: Sept. 01, 2025. [Online]. Available: https://cadmus.eui.eu/entities/publication/87e984eb-d120-5a75-ab5f-10ac85b27628

[27] S. Vanhove, “Peer-to-peer electricity trading: challenges for the distribution system operator (DSO) under EU law,” in *2020 17th International Conference on the European Energy Market (EEM)*, Sept. 2020, pp. 1–5. doi: 10.1109/EEM49802.2020.9221885.

[28] GSE, “Ritiro Dedicato: cosa è, requisiti e quanto viene pagato dal GSE.” Accessed: Aug. 01, 2025. [Online]. Available: https://www.gse.it/servizi-per-te/fotovoltaico/ritiro-dedicato

[29] GSE, “Scambio sul posto.” Accessed: Aug. 01, 2025. [Online]. Available: https://www.gse.it/servizi-per-te/fotovoltaico/scambio-sul-posto

[30] GSE, “Scambio Sul Posto, Stop Al Meccanismo.” Accessed: Aug. 01, 2025. [Online]. Available: https://www.gse.it/servizi-per-te/news/scambio-sul-posto-stop-al-meccanismo