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## Glossary

Term	Definition
Aggregator	market participant who combines multiple customers shifted consumptions or generated electricity for sale, purchase, or auction in any electricity market. <sup>1</sup>
Ancillary services	Refer to functions that help grid operators maintain a reliable electricity system. Ancillary services maintain the proper flow and direction of electricity, address imbalances between supply and demand, and help the system recover after a power system event. <sup>2</sup>
Blockchain technology	shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network. An asset can be tangible (a house, car, cash, land) or intangible (intellectual property, patents, copyrights, branding).
Capacity Mechanisms	Enable power plants to be available for generating electricity when needed. In exchange, the mechanisms provide payments to these power plants. These capacity payments are in addition to the earnings power plants gain by selling electricity on the power market. <sup>3</sup>
Controllable Loads	electricity consuming equipment under control or dispatch of an energy service provider, system operator, aggregator or other transmission organization with the objective to produce energy or generate demand savings. For example: electric vehicles (EVs), heat pumps or demand response.
Data analytics	the science of analysing raw data to make conclusions about that information.
Demand flexibility	is defined as the ability of a customer to deviate from its normal electricity consumption profile, in response to price signals or market incentives. <sup>1</sup> It can be upward or downward, and also implicit or explicit
Demand Response (DR)	also known as demand-side response, is a change in electricity consumption by end-users to help balance the electricity grid. It is a measure for reducing energy load in response to supply constraints, generally during periods of peak demand.
Distributed energy resources (DERs)	Small or medium-sized resources, directly connected to the distribution network.
Distribution System Operator (DSO)	a natural or legal person responsible for operating, ensuring the maintenance of and, if necessary, developing the distribution system in a given area and, where applicable, its interconnections with other systems and for ensuring the long-termability of the system to meet reasonable demands for the distribution of electricity;
District heating or cooling	distribution of thermal energy in the form of steam, hot water, or chilled liquids, from central or decentralised sources of production through a network to multiple buildings or sites, for the use of space or process heating or cooling;
Electricity generation system	process of generating electric power from sources of primary energy (an energy form found in nature that has not been subjected to any human engineered conversion process)

Energy Management System (EMS)	It enables bidding in the market on behalf of the prosumer to share energy and simultaneously ensure the security of the prosumer's energy supply. Its activity is triggered by real-time demand and supply information and the rules set by the prosumer on various market and other parameters (price, source of energy, roles in the market, weather forecasts, etc.). <sup>4</sup> On a simpler consideration it can also be used to monitor and control assets, operating at building or community level.
Energy Services Company (ESCO)	is a company that offers energy services which may include the implementation of energy efficiency and/or renewable energy projects. <sup>1</sup>
Energy storage system	the capture of energy produced at one time for being used later to reduce imbalances between energy demand and energy production. Small scale systems can be categorized as ones that are able to supply energy in various forms for a building, or a small area, or a limited community, or an enterprise. <sup>5</sup>
Final customer, energy	end user to whom the energy is supplied for all possible uses, including the main final end-use sectors: industry, transport, households, services and agriculture.
Flexibility services	existing and developing solutions that electricity system users can provide to help balance demand and supply in the electricity network and support its efficient use.
Information and Communication Technologies (ICT)	ICT is defined as a diverse set of technological tools and resources used to transmit, store, create, share or exchange information. These technological tools and resources include computers, the Internet (websites, blogs and emails), live broadcasting technologies (radio, television and webcasting), recorded broadcasting technologies (podcasting, audio and video players, and storage devices) and telephony (fixed or mobile, satellite, videoconferencing, etc.).
Information system	Helps prosumers within a P2P energy sharing system to decide on energy parameters by integrating them to a suitable market platform with equal access to each participant, monitoring the market operation, and imposing constraints on prosumers' decisions for the network security and reliability purposes. <sup>4</sup>
Market Operation	Enables prosumers to experience an efficient energy sharing process by providing services to match the buy and sell orders in real-time. The different time horizon of the market operation enables participants to share their resources with different community members at various time slots of trading at a price that commensurate with the status of demand and supply of energy within the community. <sup>4</sup>
Microgrid	a small network of electricity users with a local source of supply that is usually attached to a centralized national grid but is able to function independently, also referred to as "energy islands".
Peer-to-peer (P2P)	This generic term refers to interactions between individuals (or peers) on an equal or flat hierarchical level, as opposed to a master-slave or client-server type of interaction. For example, in the context of a P2P service, some peers are the producers while other peers are the consumers of that service.
Power-to-H2	refers to the use of technology to obtain hydrogen, which can be stored with electricity (i.e. electrolyzers enabling to obtain hydrogen from water).



Power-to-heat	refers to the generation of heat, which can be stored, using electricity (i.e., heat pump technology with district-level storage tanks or district heating network; hot water storage powered by heat pump technology or electric water heaters)
Price mechanism	The pricing of P2P sharing balances between the energy demand and supply within the connected community. Depending on the regulation within the region, energy prices may or may not include surcharges, taxes, and subscription fees. Regardless of types, all pricing schemes reflect the state of the energy within the connected community. <sup>4</sup>
Producer, energy	any natural person or legal entity that owns an electric power production facility (an energy generation system)
Prosumer, energy	Someone who both produces (producer) and consumes (consumer) energy
Renewable energy	energy from renewable non-fossil sources, namely wind, solar (solar thermal and solar photovoltaic) and geothermal energy, ambient energy, tide, wave and other ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas, and biogas
Renewables power purchase agreement	a contract under which a natural or legal person agrees to purchase renewable electricity directly from an electricity producer.
Renewables self-consumer	a final customer operating within its premises located within confined boundaries or, where permitted by a Member State, within other premises, who generates renewable electricity for its own consumption, and who may store or sell self-generated renewable electricity, provided that, for a non-household renewables self-consumer, those activities do not constitute its primary commercial or professional activity.
Repowering	renewing power plants that produce renewable energy, including the full or partial replacement of installations or operation systems and equipment for the purposes of replacing capacity or increasing the efficiency or capacity of the installation.
Self-consumption, collective	The possibility for a group of consumers to use electricity generated on-site, or nearby where it is being produced. When the connection between the group of consumers and the generation uses the main grid, it is often referred to as “energys sharing”. <sup>1</sup>
Self-consumption, individual	It is the ability for a single consumer to use electricity generated on-site. <sup>1</sup>
Smart meter	Electronic device that records electricity/gas/water consumptions and communicate the information to the consumer for greater clarity of consumption behavior, and electricity suppliers for system monitoring and customer billing.
SME	Small or medium-sized enterprise

Storage system, energy	technology implemented to store energy to be drawn upon at a later time to perform useful operation.
Substation	part of an electrical generation, transmission, and distribution system, it transforms voltage from high (HV) to low (LV), or the reverse.
Supplier, energy	authorised supplier wholesaling or retailing energy or products thereof
Transmission System Operators (TSO)	entity entrusted with transporting energy in the form of natural gas or electrical power on a national or regional level, using fixed infrastructure



# 1. Introduction

Energy communities are emerging as a promising solution to drive the transition towards a sustainable and decentralised energy system in Europe. These communities empower individuals, businesses, and local stakeholders to actively participate in the production, consumption, and sharing of renewable energy resources. To support the development and success of energy communities, it is essential to establish a supportive policy framework at both the European Union (EU) level and the national/local level.

This document will begin by providing an overview of the existing regulations pertaining to the framework of Energy Communities. Subsequently, it will delve into a detailed analysis of the ecosystem within each participating country, namely the Netherlands, Slovenia, Spain, and Italy. In this section, we will briefly introduce each country, including the establishment of their respective energy communities, the prevailing national legislation, and the challenges encountered by different partners in each jurisdiction.

Then, the document will present a comprehensive set of policy recommendations aimed at fostering the growth of energy communities in Europe. The recommendations are divided into two parts: EU level and national/local level. At the EU level, the recommendations focus on proposing changes to existing legislation and suggesting new measures to encourage the deployment of energy communities. On the national and local levels, the recommendations provide guidance for policymakers to transpose the EU Directives into national legislation, creating an enabling environment for the establishment and expansion of energy communities within their respective countries. The policy recommendations are based on an analysis of encountered barriers, insights from interviews with project partners, and input gathered through a questionnaire conducted among the project partners.

By implementing these recommendations, European countries can create a conducive environment that supports the establishment and success of energy communities. This will not only contribute to achieving the EU's climate objectives but also promote the transition towards a carbon-neutral future. Furthermore, these policy measures aim to empower citizens, enhance energy efficiency, foster collaboration between stakeholders, and ensure the inclusion of vulnerable and disadvantaged groups in the energy transition.

It is crucial for policymakers at all levels to embrace these recommendations and take proactive measures to enact the necessary legal and regulatory frameworks, provide financial support, and facilitate knowledge-sharing among energy communities. By doing so, Europe can unlock the full potential of energy communities, accelerate the adoption of renewable energy, and pave the way for a sustainable and resilient energy future.

## 2. Existing EU Framework

The [Clean Energy for all Europeans package](#) includes both definitions of two forms of energy communities: the Renewable Energy Community (REC) and the Citizen Energy Community (CEC). It furthermore introduces two new market models: Peer-to-Peer trading and 'Sharing'.

Adopted in 2019, the overall goal consists in decarbonising the energy system in Europe, aiming at moving towards clean energy and moving away from fossil fuels. In regard to P2P energy communities,



two directives are relevant: The revised [Renewable Energy Directive \(2018/2001/EU\)](#) and the [Electricity Directive \(2019/944/EU\)](#).

### Renewable Energy Directive

The revised Renewable Energy Directive (RED II) entered into force in 2018. It increases the EU target of Renewable Energy Sources consumption to 32% by 2030. Thereby, member states should make certain that Renewable Energy Communities (REC) can “participate in available support schemes on equal footing with large participants”.

According to Article 2 ‘renewable energy community’ means a legal entity:

(a) which, in accordance with the applicable national law, is based on open and voluntary participation, is autonomous, and is 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;

(b) the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities;

(c) the primary purpose of which 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.

RED II also gives a definition on peer-to-peer trading. “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”.

### The Electricity Directive

The Electricity Directive 2019/944/EU amends Directive 2012/27/EU, setting common rules for the internal market of electricity. This amendment aims at enabling citizens to participate more actively in the electricity market, mentioning energy communities as one possible way.

In this context, the Directive highlights the definition Citizen Energy Community (CEC). In Article 2 a citizen energy community is defined as a legal entity that:

- a) is based on voluntary and open participation and is effectively controlled by members or shareholders that are natural persons, local authorities, including municipalities, or small enterprises;
- b) 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;
- c) may engage in generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services.





### Upcoming legislation

In addition to the previous two Directives, the European Commission launched its proposal for the reform of the EU's Electricity Market Design. Within [this proposed Regulation](#), the 'Regulation to improve the Union's electricity market design' attention is given to the revamping of energy sharing. Energy sharing in this sense is to be understood as *"the self-consumption by active customers of renewable energy generated or stored offsite either from facilities they own, lease, rent in whole or in part or which has been transferred to them by another active customer"*. These arrangements are then either based on a private contract between consumers or through a legal entity. This entity can then take the form of a REC or a CEZ.

As such, energy sharing is defined as follows 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, rent in whole or in part; or
- b) the right to which has been transferred to them by another active customer whether free of charge or for a price.

Subsequently, the 'right to energy sharing' which was already present in both the Electricity and Market Directive is enshrined in Article 15a of this Regulation. Within this Article, the right for all households, small and medium sized enterprises and public bodies to participate in energy sharing as active customers is underlined. In addition, it is accentuated that Member States should undertake measures to ensure the participation of vulnerable households to participate in such schemes.

However, as this constitutes a proposal for a Regulation and is introduced in the finishing stages of this project, the policy recommendations cannot be based on these provisions on energy sharing. Nonetheless, they might offer a guiding frame for which type of policies are currently considered at the European level.

## 3. Energy Communities in the NRG2Peers Case Study Countries: Current legislation and barriers

The NRG2Peers Case Study has taken place in four Members States: Netherlands, Slovenia, Spain, and Italy. These countries have been chosen as they differ regarding the stage that Energy Communities are legally and practically integrated at the start of the project. To formulate recommendations on an EU level, it is crucial to understand the state of openness towards the concept of Energy Communities in its whole European bandwidth. Therefore, whereas the Dutch Ecosystem is categorized as *Innovators and Early Adopters*<sup>1</sup>, meaning that innovators are eager to test new technologies and to take high risks, innovators in Slovenia and Spain have rather the tendency to act as *Early Majority*, aiming to reduce risks and focusing on increasing productivity through new technologies. Italy on the

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<sup>1</sup> Definitons of Categories of innovation adopters can be found here: <https://www.business.qld.gov.au/running-business/growing-business/becoming-innovative/innovation/categories-customers>.



contrary can count as an example for *Late Majority & Laggards*, characterised by being rather technology-shy and seeking to keep the status-quo.

In this chapter, each Case Study Country is specified in terms of current legislation, pointing to the requirement for becoming an Energy Community and for engaging in P2P exchange.<sup>2</sup> Furthermore, barriers will be described per country to serve as a base for the recommendations to be formulated in Chapter 4.

### 3.1. Innovators and Early Adopters

#### 3.1.1 Netherlands

In the pilot country of the Netherlands, the Schoonschip energy community has been one of the leading pilots concerning this topic. Schoonschip is a bottom-up community initiative in Amsterdam with the aim to become the most sustainable floating neighbourhood of Europe. The neighbourhood consists of homes for 46 households and a community center on 30 floating plots. The most important goal of the Schoonschip initiative is to become a true catalyst for the Dutch and global transition towards a circular economy. Schoonschip aims to achieve this objective by demonstrating new social and economic models, scalable technologies, and by re-envisioning the way it approaches urban development. As part of the original vision for the “Cleantech Playground,” Schoonschip aims to become a living lab development which needs to happen on the side of (clean) technologies and new (scalable) markets where breakthrough innovations and circular economy principles can be validated for scaling up.

#### Legislative framework

Current Legislation	Requirements for becoming a EC	Requirements for engaging in P2P exchange
Elektriciteitswet 1998	<ul style="list-style-type: none"> <li>- Allows cooperatives to access to electricity markets with limited rights (generate own electricity)</li> <li>- Energy communities not recognised as entities as such</li> <li>- Sharing not included</li> <li>- Supply to households limited to entities with supply license</li> <li>- Storing of energy not mentioned</li> <li>- Operating a local grid not allowed</li> <li>- Aggregation not prohibited, but not mentioned</li> </ul>	<ul style="list-style-type: none"> <li>- No reference to P2P</li> <li>- Only mentioned role for prosumers is electricity feed-in with ‘net metering’ (electricity fed into grid can be exchanged for electricity consumed at a later date)</li> <li>- Only suppliers with a supply license are allowed to supply to small consumers (consumers with a connection to the grid smaller than 3 x 80 A (≈ 55 kW), which includes almost all households.</li> </ul>
Experimenten Elektriciteitswet 2015-2018	<ul style="list-style-type: none"> <li>- Creation of pilot legal entity (project-net) akin to EU EC definition</li> <li>- Operation of a local grid by EC allowed</li> </ul>	<ul style="list-style-type: none"> <li>- P2C2P allowed as communities were automatically granted a supply licence</li> </ul>

<sup>2</sup> More extensively, the current legislation for each country can be found in the Deliverable 2.4 NRG2peers Guidelines and Value Proposition.



	- P2C2P allowed as communities were automatically granted a supply licence	
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EC constituent elements	Requirement
Organisational (legal entities and available partnerships)	- Cooperative most common form for citizen energy collectives
Technological requirements	- PV most common for cooperatives --> Wind power most volume overall - 6 DSOs in Netherlands owned by municipalities and provinces - Smart meter penetration rate > 80%
Feasibility analysis, incentives and supports	- Net metering (offset consumption through self-supply) (related to feed in) will be phased out from 2023 until 2031 - Per 2022 new subsidy for cooperative energy generation (SCE) + Diversity of subsidies for RE - Soft loans

### Update legislation

Important for the Dutch case to understand is that while “energy communities” are not yet recognised as such in current legislation, upcoming legislating that aims to reform the current Electricity Law and Gas Law is set to change that. More specifically, the Dutch government is proposing to transpose both RED II and EMD and create a common definition of an energy community that will be able to function as a legal entity:

*“Energy Community: legal entity [“person”] carrying out activities in the energy market on behalf of its members or shareholders, whose main objective is to provide environmental, economic or social benefits to its members or shareholders or to the local areas in which it operates, and not to make a profit;”*

However, whereas this piece of legislation was expected to come into effect towards the end of 2022, the main legislative advisory body in the Netherlands (Raad van State) issued a negative consultative opinion of the new law. The New Energy Law was then expected to come into effect later in 2023. Due to the resignation of the Dutch government in July 2023, the new combined Energy Law is not expected to enter into force before 2024 which means that the policy recommendations in this document will reflect the current legislative and legal framework.

### Barriers encountered

Regarding the barriers encountered during the pilot, Schoonschip highlighted several issues which complicated the development of P2P ECs. Initially, issues arose regarding access to proper financing from banks. While not necessarily related to energy as such, Schoonschip struggled to receive financing due to it consisting of multiple households on the water on one plot. This instance is not accounted for normally in Dutch laws. It took a specifically green-oriented bank to accept their request before the prospective ECs could access adequate finance. However, the incompatibility with existing legal structures within the Netherlands remained an issue for the Community.



To be more specific, it was lamented that the Dutch Government neglected to fully adopt RED II and EMD into its legal framework. In this sense, by only adapting the domestic legislative framework in relation to the transposition of the EU Directives in line with the expected New Energy Law, but not creating a new legal framework as such, the pilot EC often encountered difficulties when its preferences clashed with local procedures.

For example, Schoonschip was initially in a way that that EC members would generate electricity and share this through a block-chain based peer-to-peer supply. However, whereas the EC would be eligible for a supply license, this would not be the case for individual members thus inhibiting direct peer-to-peer trading. Subsequently, a solution was found through supply via the EC, which then resulted in peer-to-community-to-peer supply<sup>3</sup>.

Additionally, the EC wished to have full control of the heat pumps installed near or on the houseboats. This would then allow for the better optimisation of supply and demand which would result in a reduction of costs. Nevertheless, the EC wishing to set up a collective contract for the heat pumps were met with municipal barriers calling for individual contracts instead, in line with municipality's interpretation of the Immovable Property Valuation Act. This subsequently resulted in an increase of costs for the EC members<sup>4</sup>.

What is more, the Environmental Tax Act also hampered the operations of *Schoonschip*. As such, it was initially planned that electricity produced and consumed within the confines of the EC would not be subject to an energy tax. Nevertheless, the Act stipulates that any electricity supplied to a connection is eligible for the tax. Illustratively, while the grid of the project was not operated by a DSO or part of the public grid, it was according to the Act a grid nonetheless which meant that a tax was due<sup>5</sup>.

In addition to this, some tax related issues were also recorded in relation to electricity storage. To enhance self-sufficiency, some batteries were connected to the EC grid. However, as batteries are as of yet not defined in the Electricity Act, the Dutch tax authority decided that the storage of electricity can both be considered as the consumption and production of electricity. Consequently, the electricity is taxed once when it is 'consumed' by the battery and once when it consumed by the end consumers<sup>6</sup>. This issue has in the meanwhile been solved, but strongly affected the feasibility of the project in the early phase.

As such, a comprehensive legal framework that is attuned to the needs of EC would have been able to ensure that roadblocks like these could have been adequately streamlined.

Moreover, a challenge for Schoonschip was to start trading a virtual power grid (Virtual Power Plant or community-based Virtual Power Plant). Currently capacity requirements from the DSO and TSO's lock out smaller players from these markets, even though trading on these markets can be relevant for communities and for society and grid operators when executed with many households on a large scale.

On top of that, these energy markets focus on 'financial value' creation. In the traditional point of view this makes sense, as most large energy companies do primarily have a financial point of reason when

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<sup>3</sup> Diestelmeier, L., & Swens, J. (2021). Energy Communities in the Netherlands: Learning from Local Energy Initiatives. In M. Roggenkamp & C. Banet (Eds.), *European Energy Law Report* (pp. 239-264): 14-15.

<sup>4</sup> Idem.: 15

<sup>5</sup> Ibid.

<sup>6</sup> Idem.: 15-16



operating on these markets. But for energy communities' other values beyond financial gain are also important.

For Schoonschip for example, sustainability is a key value. Currently, there is no policy that enables the sourcing of energy on flexibility markets based on the energy mix (for example: wind, solar, biogas, coal, gas). It is only possible to trade energy based on price. In addition, third parties controlling their appliances should reflect personal values beyond financial optimisation in their functioning (do switch off PV even if it is financially beneficial).

As such, flexibility markets and energy actors should be attuned to this need to view the deliverance and creation of energy as a purely financial matter. In this sense, community values such as ecology, sustainability, and democracy should be strongly reflected in a regulatory framework.

Beyond these points, the organisational requirements for a EC were experienced as overtly taxing for its members. This was then primarily due to the fact that ECs are founded on the principles of voluntary participation and being non-for-profit. Nonetheless, ECs still have to comply with the same requirements as any other energy supplier. This then requires a high degree of professionalisation that is not realistic in terms of the resources available to ECs.

One solution to this issue would be to allow DSOs to operate the micro-grid of ECs, which would alleviate the administrative burden on the latter's members. One way of managing this would be to create a collective of ECs that would subsequently hire professionals and sign contracts with DSOs to accomplish this. This however would require that the DSOs operate the local grid in a completely new way, allowing a.o. collective connection - and transport contracts and collective net metering. Regardless, the local context in the Netherlands does not allow DSOs to act in such a way. This is due to overtly stringent consumer protection laws, which both add to grid capacity issues and increase the risk for DSOs to participate in the aforementioned scheme.

## 3.2. Early majority

### 3.2.1 Slovenia

The Luče energy community in Slovenia was included in NRG2peers as an ethnography-only pilot, i.e., developing and testing the qualitative research methodology, and gathering qualitative data on user and stakeholder perspectives and practices to identify the needs, barriers and enablers. The energy community itself was established as a demonstration pilot within another H2020 project ([COMPILE](#)) in 2019/2020.

Luče is the first multi-building energy community in Slovenia, established at the time as a “community-enhanced” self-supply energy community. It is located in a sub-alpine village with a history of power outages related to weather events, a weak local grid and energy-intensive activities (mostly related to farming). The initial goal within the Compile project was therefore to set up a local energy community in order to address the issue of limited integration of RES due to weak local low voltage network by integrating energy storage (community and home batteries) and advanced energy management systems into the community set-up, thereby mitigating the problems with frequent power failures and enabling the community to operate in island mode. Besides improving the security of electricity supply, the establishment of an energy community was also expected to create other benefits for the local community, including social and economic benefits (lowering the energy costs, supporting local self-sufficiency and resilience in times of grid failures due to weather-related events, further



supporting the community cohesion etc.), as well as setting an example for other communities in Slovenia.

**Legislative framework**

Current Legislation	Requirements for becoming a EC	Requirements for engaging in P2P exchange
Act on the Promotion of the Use of Renewable Energy Sources 2021 (ZSROVE)	<p><b>Renewable Energy Communities</b></p> <ul style="list-style-type: none"> <li>- Legal entities, based on voluntary participation, effectively controlled by members in the vicinity of renewable energy projects owned by that legal entity;</li> <li>- Members are legal or natural persons</li> <li>- Main objective is to provide environmental, economic and social benefits to its members, or the local areas in which they operate</li> <li>- Have the right to produce, consume, store and sell energy from renewable sources, including contracts for the purchase of electricity from renewable sources; and have equal access to relevant energy markets</li> </ul> <p><b>Community self-supply</b></p> <ul style="list-style-type: none"> <li>- Production of electricity from RES to cover final customers connected to CSS with self-supply devices</li> <li>- Can produce RES for own consumption, store it or sell it</li> </ul>	
The Electricity Supply Act 2021 (ZOEE)	<p><b>Energy communities of citizens</b></p> <ul style="list-style-type: none"> <li>- Cooperatives</li> <li>- Can work with any source of energy</li> </ul>	<p><b>Active consumers</b></p> <ul style="list-style-type: none"> <li>- Final consumer(s) that consume/store/sell locally/self produced electricity</li> </ul> <p><b>Aggregators</b></p> <ul style="list-style-type: none"> <li>- Connects supply/demand of electricity by system users for activities on electricity market</li> </ul>
The Decree on	<b>Community self-supply</b>	-



<p>The self-supply of electricity from renewable energy sources (Renewed in 2022)</p>	<ul style="list-style-type: none"> <li>- Production of electricity from RES to cover final customers connected to CSS with self-supply devices</li> <li>- Can produce RES for own consumption, store it or sell it</li> <li>- <i>Self-supply of multi-apartment buildings</i> (customers within same building)</li> <li>- <i>RES Community</i> (customers in separate units)</li> </ul>	
		<p><b>Participation in Balance scheme</b></p> <ul style="list-style-type: none"> <li>- Prosumers or EC wishing to sell surplus energy have to become member of a balance group</li> </ul>

EC constituent elements	Requirement
<p>Organizational (legal entities and available partnerships)</p>	<p><b>EC as legal entities</b></p> <ul style="list-style-type: none"> <li>- REC or ECoC defined as cooperatives (Cooperatives Act ZZAD)</li> </ul> <p><b>RES self-supply communities</b></p> <ul style="list-style-type: none"> <li>- No legal entity required by law</li> <li>- Consumers connected by contract</li> </ul>
<p>Technological requirements</p>	<ul style="list-style-type: none"> <li>- Large hydro most common</li> <li>- PV 2% --&gt; but large (expected) increase in demand</li> </ul>
<p>Feasibility analysis, incentives and supports</p>	<p><b>Loans and subsidies</b></p> <ul style="list-style-type: none"> <li>- Eco Fund</li> <li>- Grants/direct subsidies for micro-PV for citizens</li> </ul> <p><b>Support</b></p> <ul style="list-style-type: none"> <li>- Currently no SPOC --&gt; ZSROVE foresees establishment</li> </ul>

### Update legislation

The ‘A Act on the siting of installations for generation of Electricity from Renewable Energy Sources’<sup>7</sup> has recently been implemented (in force since 3 August 2023). An important component to this piece of legislation is that it has lowered the requirement for owner consent in multi-apartment buildings for the deployment of RES from 100% to min. 75%. Due to the potentially conflicting interests of individual owners, the 100% consent threshold was seen as a big impediment for the deployment of RES and has therefore been removed.

<sup>7</sup> <http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO8764>



## Barriers encountered

Since the Luče energy community was established, the Slovenian legislative framework has been updated in line with the EU Directives. At the time, however, there were certain legal barriers which impacted how the Luče EC was designed.

Collective self-consumption was the only possible form of energy communities in Slovenia – so Luče does not exist as a legal entity, as this was not required by the law. Likewise, the EC activities were limited to energy generation and self-consumption, while other activities were not regulated (e.g., aggregation). In line with this, it is still subject to net-metering and not allowed to benefit otherwise.

At the time, two significant challenges outlined in the Decree on the self-supply of electricity from renewable energy sources were encountered. The first obstacle was the localisation criterion, which mandated that community self-consumption be consolidated behind a single LV transformer station. Consequently, this restriction limited the participation of Luče village households in the project. The second hurdle was the official limit imposed on self-supply generation. However, the Compile project managed to secure a sandbox environment, allowing them to install PV systems with five times the capacity allowed by the DSO. This served as a demonstration that, when combined with storage, energy management, and control mechanisms, it is possible to significantly increase generation capacity despite the limitations of the local grid without investment in the grid.

As said, however, the legislation has meanwhile been updated and a number of those challenges have already been addressed within two key new Acts, approved in 2021, which now regulate energy communities in Slovenia. These are the Act on the Promotion of the Use of Renewable Energy Sources (Zakon o spodbujanju rabe OVE; ZSROVE<sup>8</sup>) and the Electricity Supply Act (Zakon o oskrbi z električno energijo; ZOEE<sup>9</sup>). There was also a new Decree on the self-supply of electricity from renewable energy sources introduced. Among other things, they define an energy community as a legal entity (REC and CEC) in addition to self-supply communities, allow energy communities beyond the single LV transformer, as well as enable opportunities for other activities beyond self-consumption (incl. energy sharing, aggregation etc.).

Even after the introduction of the new legislation, several challenges were identified, although they are not specifically linked to the Luče energy community. These challenges mainly arise from the fact that the EU Directives were practically translated word-for-word into the Slovenian legislative framework. While this approach does present a number of new opportunities for community energy projects and offers a favorable level of flexibility (e.g., the absence of localization criteria for both REC and Citizen Energy Communities (CEC)), it appears that there are a number of associated issues or interconnected legislations that will also need to be adapted in order to facilitate the implementation of more advanced community energy initiatives:

- Unclarity/potential confusion: There are currently **two legal acts with the same name**: Decree on the self-supply of electricity from renewable energy sources. The old one, which has ended but is still in use (for self-supply projects, which register and acquire consent until the end of 2023 and are implemented by the end of 2024), and the new Decree (2022).
- Since the introduction of the new legislation, none of the energy communities have embraced the new opportunities that have emerged, such as the ability to sell and aggregate generated

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<sup>8</sup> ZSROVE, available online (in Slovenian): [link](#)

<sup>9</sup> ZOEE, available online (in Slovenian): [link](#)





energy. There are several reasons for this, but one of the main issues is that the old Decree has a clear model of network charges and tax payment (1-year net-metering). In contrast, the new legislation brings about an important change **as net-metering is phased out and network charges are now based on all electricity supplied**. Yet, the new Decree **does not specify the billing period**, instead assuming that it will be determined through an agreement between the energy supplier and the consumer. This creates the impression that the new legislation may be economically less favourable under current tariff system (also undergoing change currently), than the previous one and makes it challenging for consumers to anticipate and calculate costs in advance, leading to significant uncertainty. This issue is currently being considered by Slovenian legislators however.

- The absence of functional energy communities as legal entities or aggregators, capable of selling surplus energy, presents a challenge in terms of providing **concrete examples or actionable business models**. It is crucial to develop clear models, even if they are theoretical, that explain how the new legislation impacts the establishment process and operation of an energy community as a cooperative. These can serve as a foundation for future implementation. They could include consideration of how the phasing out of net-metering alters the economic dynamics for energy communities (strategies for cost management and revenue generation), how to establish transparent and fair agreements and negotiate billing arrangements with energy suppliers (parameters as billing intervals, pricing structures, contractual obligations, grid fee etc.), evaluating potential business models for community-based energy trading etc.
  - As such, **one solution could be the creation of a European umbrella organisation for ECs**. This could then function as a platform to share best-practices on this topic, which is particularly relevant because RES ECs are frequently in their infancy in EU countries.
- The **participation of municipalities** (local governance organizations) in community energy initiatives is currently unclear. The existing Acts, for instance, only allow cooperatives as the eligible legal entity for Citizen Energy Communities (CEC). This provision prevents municipalities from legally engaging in such entities. However, it is essential to acknowledge that municipalities have a crucial role in supporting, establishing, and driving energy community initiatives at the local level. This should be addressed to allow municipalities active participation in local energy community initiatives.
- The uptake of community energy initiatives is being hindered by the **technical constraints of the grid**. In some areas, connecting new PV power plants is unfeasible due to limited grid capacity. This issue is not yet receiving adequate attention, and the current rules governing DSOs may require amendments. One potential solution is to reconsider the limitations on the power capacity with which PV plants are permitted to inject into the grid, rather than restricting the capacity of installations themselves.
- In general, **procedures for the installation of PV and establishment of energy communities are still too complex and** should be a) simplified and b) well-defined and explained (also engaging the local energy agencies / RES single point of contact etc.). Consequently, **the step from collective self-supply to EC was often not made**, as community efforts would find the logistical requirements to not be worth the effort.



- Nonetheless, the low barrier to entry to opt for self-supply could be indicative of the future establishment of RES ECs, as it is a good way to make community members acquainted with interacting with RES systems. In this sense, **if the step towards the establishment of P2P ECs wants to be made, it is important to increase state support and to direct funding to new pilots.**
- Current policy framework doesn't sufficiently incorporate the issue of **energy poverty**, and the question of how to involve households situated in **social/public housing** into community energy projects. A clear policy perspective should be provided to enable and support their involvement, supplemented with corresponding financial incentives.

### 3.2.2 Spain

In the pilot country of Spain, the electricity distribution company Alginet Distribución Energía Eléctrica S.L.U played a prominent role in spearheading the creation of an energy community. As a member of a cooperative group involved in the distribution and commercialisation of electric energy, the organization recognised the importance of integrating sustainable self-production into their existing activities.

The primary objective of establishing an energy community in Alginet was driven by several key aims:

- Cost reduction from a social perspective: By fostering the formation of an energy community, the goal was to minimize costs for community members and promote affordability, ensuring that energy remains accessible to all.
- Combating climate change: Recognising the urgent need to address climate change, the initiative sought to contribute to the reduction of greenhouse gas emissions and promote environmentally friendly practices within the community.
- Long-term self-sufficiency, ecological, and sustainability: The Alginet energy community aimed to achieve self-sufficiency in energy production, relying on renewable and eco-friendly sources. By prioritizing sustainable practices, the community aimed to ensure long-term viability and minimise environmental impact.

#### Legislative framework

Current Legislation	Requirements for becoming a EC	Requirements for engaging in P2P exchange
Electricity Sector Law 24/2013	Purpose to <i>“to establish the regulation of the electricity sector, guaranteeing the electricity supply with the necessary levels of quality and at the minimum possible cost, ensuring the economic and financial sustainability of the</i>	



	<i>system and allowing a level of effective competition in the electricity sector, all this within the principles of environmental protection of a modern society</i> <sup>10</sup>	
Royal Decree 244/2019	<ul style="list-style-type: none"> <li>- Legal definition self of consumption</li> <li>- Allows shared or collective self-consumption (in internal network and in nearby installations 500m)</li> </ul>	<ul style="list-style-type: none"> <li>- Procedure to share generated energy is regulated by means of <b>split coefficients</b></li> <li>- Scheme of “simplified compensation” (through sort of net metering applied in each energy bill)</li> </ul>
Royal Decree (RD)-Law 23/2020	<ul style="list-style-type: none"> <li>- Definition of REC (not yet definition of CEC)</li> <li>- Comprises “<i>measures with the aim of guaranteeing a clean, fair, reliable and economically competitive energy transition, which is especially important in the scenario that arises once the state of alarm has been overcome</i>”<sup>11</sup></li> </ul>	-
Order TED/1247/2021	-	<ul style="list-style-type: none"> <li>- Coefficients are determined ex ante are modifiable (possible every 4 months)</li> <li>- Mention of harmonising figure (not yet defined) required to the application of ex post coefficients</li> </ul>

EC constituent elements	Requirement
Organisational (legal entities and available partnerships)	<ul style="list-style-type: none"> <li>- Legal form must be chosen amongst of the following: Cooperative, Association, Mercantile society, Group of economic interest)</li> </ul>
Technological requirements	<ul style="list-style-type: none"> <li>- Distributed Generation: self-consumption most significant; PV most potential               <ul style="list-style-type: none"> <li>o Storage Strategy at national level for 2030: minimum value of 400 MW of behind-the-meter batteries, identification of potential thermal energy storage in various forms such as accumulators, heat pumps etc.</li> </ul> </li> </ul>
Community members	<ul style="list-style-type: none"> <li>- Check Key recommendations to support the P2P energy community initiation, establishment, and management processes (Table 1 in D 2.4)</li> </ul>

<sup>11</sup> Extracted from [BOE-A-2013-13645](#) (in Spanish)



## Update Legislation

In Spain, the new **Royal Decree 18/2022** has been implemented which approves measures to strengthen the protection of energy consumers and to contribute to the reduction of natural gas consumption. Articles 46.2 and 19 abolish the obligation to obtain prior administrative authorisation and construction authorisation for production plants with and installed capacity of up to 500 KW. Through Article 15.2 Renewable energy communities are given the possibility of acting as representatives of all the consumers that make up the community, in collective self-consumption, provided that the consumers grant the corresponding authorizations. Article 16.1 sets that the requirement for direct lines connecting renewable generation plants to consumers that required both the producer and the consumer to be from the same business group is deleted.

Also, the **Royal Decree 20/2022** came into force, Article 15 modifying the distance for shared or collective self-consumption in Spain to 2000 meters to generation and consumption connected to low voltage.

Moreover, the **Royal Decree-Law 5/2023** includes specific amendments incorporated into **Electricity Sector Law 24/2013** in relation to energy communities. While Article 6.1 introduces the definition of energy citizen communities as a new subject within the system, Article 12 bis & 12 ter regulate the governing principles of both renewable energy communities and energy citizen communities.

In April 2023, the Ministry for Ecological Transition and Demographic Challenge released for public consultation the draft text of a Royal Decree aimed at regulating the concepts of renewable energy communities and citizen energy communities. The deadline for submitting comments ended in late May, and the decree is currently awaiting approval and publication. However, this entire process could potentially be delayed due to the elections held last July and the ongoing government formation process.

This Royal Decree aims to develop and regulate the concepts of Renewable Energy Communities and Citizen Energy Communities, in compliance with Directive (EU) 2018/2001 of the European Parliament and the Council and Directive (EU) 2019/944 of the European Parliament and the Council, establishing requirements, rights, and obligations for both entities. It seeks to ensure that these communities can compete on an equal footing with other producers in the electricity market while preserving their participatory and collaborative nature. Additionally, it promotes the involvement of households and vulnerable consumers in these communities, as well as the possibility of sharing energy produced among community-owned installations.

The regulations also encompass aspects related to the economic framework of renewable energies, introducing measures to maintain a level playing field in electricity markets and to encourage local participation in renewable energy generation. Furthermore, the possibility of applying these concepts in other energy sectors such as transportation, heating, and cooling is considered. The Royal Decree also addresses elements like the economic regime of renewable energies, obstacle assessment, energy policies from waste, and other factors related to the sector.

To establish a flexible regulatory framework enabling these communities to thrive and compete equally with traditional players in the electricity market, the legislative proposal highlights:

- The ability for energy communities to access the Economic Regime of Renewable Energies and participate in periodic auctions that provide this regulated remuneration. These auctions will take into account the specificities of the communities, allowing them to compete with other participants and incorporating specific power quotas for them.



- To contribute to the advancement of energy communities, a portion of the capacity reserved for auctions is released, exclusively intended for generation facilities integrated within these communities. Specifically, 5% of the available capacity is released when the holder of the Secretary of State for Energy resolves, or resolves in the future, the organization of a capacity access competition.

### Barriers encountered

In Spain, the approach to establishing a Citizen Energy Community (CEC) aligns well with the Directive (EU) 2019/944, which builds upon the existing definition of Renewable Energy Communities (RECs) outlined in Directive (EU) 2018/2001. The updated Directive recognizes that CECs can engage in various activities such as generation, distribution, supply, consumption, aggregation, energy storage, energy efficiency services, and electric vehicle (EV) services. It also allows for cross-border participation, expanding the potential scope of CEC operations.

However, there is currently a lack of a comprehensive regulation that defines the rights, obligations, and procedures involving other market actors within CECs. As highlighted by the partners in the Ecosystem, the creation of national guidance on the constitution of RECs and CECs would be highly valuable. Such guidance would provide clarity and establish a framework for CECs, enabling smoother interactions with other market players and ensuring the effective implementation of CEC initiatives across the country.

Stakeholders within the Spanish Ecosystem have emphasised the need for defining various models and organisational structures, as well as the ownership aspects of Energy Communities. Another important point lays within the complexity of procedures for contracting and the partnership with market actors. The existing legislation for public entities might restrict the important role local entities can play to support and lead the development of Energy Communities. It is a complicated and bureaucratic process to get the local authorities to cede their public roofs for the installation of PV for the community, as well as to get the financing for the installation of PV plants.

As previously mentioned, the absence of a regulatory framework in Spain has led to a lack of liquidity in the markets. This deficiency has created challenges in terms of the availability of potential offers to provide flexibility services. Consequently, there is a scarcity of accessible and readily available information for flexibility service providers, as well as limited clarity regarding the definitions of flexibility products.

Furthermore, market actors are currently encountering barriers to flexibility development, the major obstacles are the Regulatory uncertainty in the absence of a clear and defined regulatory framework, the difficulty in access of the necessary information and also the requirement that each programming unit that provides balancing services must have a minimum supply capacity equal to 1MW.

In terms of the operations of Energy Communities, while self-consumption is already functioning effectively, there are challenges related to energy sharing and the entry/exit of community members that require facilitation. Currently, there is a restriction that limits Citizen Energy Communities from making peer-to-peer energy distributions beyond 2000 meters. To enable broader energy sharing, it is essential for these communities to be recognized as market actors with access to participate in the electricity market. This recognition would allow them to decide whether they want to become independent aggregators, thus enabling the inclusion of their members' generation and/or consumption in the market. It is worth noting that legislation addressing these issues is currently under development, aiming to address these operational limitations and create a more conducive environment for the functioning of Energy Communities.



Technologically speaking, a notable deficiency exists in the absence of a decentralised transaction model that facilitates energy exchange. The implementation of Blockchain technology could offer a solution by enabling energy consumers to autonomously manage their energy balances. By sharing their demand forecasts with the system operator (TSO), consumers can actively participate in energy management. Presently, the burden falls on Distribution System Operators (DSOs) to collect data, placing significant responsibility on their shoulders. An ideal system would allow for automatic exchange of transaction data, streamlining the process and reducing reliance on manual data collection methods.

### 3.4. Italy

In the pilot country of Italy, plans to establish energy communities have been led by both the municipality of Milan and the University of Perugia. The creation of Renewable Energy Communities aligns with the objectives outlined in the Air-Climate Plan of the Municipality of Milan, which recognises them as crucial tools in facilitating the city's ecological transition.

Specifically, in the case of the Chiaravalle Energy Community, the initial objective was to conduct a study on its operational and feasibility plans. The purpose was to assess the advantages and disadvantages of establishing an energy community in the area. However, as the project progressed and feasibility studies advanced, the decision was made to move forward with the practical implementation of the Chiaravalle energy community. This was made possible due to recent legislative reforms that allowed for the establishment of Renewable Energy Communities (RECs).

The primary goal behind the Chiaravalle energy community has been to promote the development of renewable energy sources while simultaneously providing support to the population residing in socially vulnerable areas. By focusing on renewable energy and addressing the needs of disadvantaged communities, the initiative aims to contribute to both environmental sustainability and social welfare.

In Perugia, three private initiatives were followed in their process of establishing a REC, involving residential units (mainly single-family houses), but also commercial activities. By the publication day of this document, only one experience out of three was successful and it is represented by the Elisa community officially established in Marsciano in July 2022. The experience of Bastardo Community is going to be officially recognised by January 2024, while the third initiative (Bordini Community) is still pending, looking for an agreement among the potential members.

#### Legislative framework

Current Legislation	Requirements for becoming a EC	Requirements for engaging in P2P exchange
Legislative Decree n.199 – 2021/11/08 + Law n.8/2020	<ul style="list-style-type: none"> <li>- RED II Directive has been transposed</li> <li>- Community needs to be an independent legal entity</li> <li>- Maximum power for single renewable energy system part of a REC is fixed at 200kW</li> </ul>	<ul style="list-style-type: none"> <li>- Energy sharing is currently entirely managed by GSE, the state-owned company that manages renewable energy incentives</li> <li>- Incentives set on shared energy</li> </ul>



	<ul style="list-style-type: none"> <li>- EC members must be under the same Medium/Low Voltage cabin (an interactive map which localises MLV cabins and the related interested area is now available in the <a href="#">GSE website</a>)</li> </ul>	
<p>Waiting for EC approval of the implementing decree of D.Lgs 199/21</p>	<ul style="list-style-type: none"> <li>- Maximum power for single renewable energy system part of a REC is fixed at 1 MW</li> <li>- EC members must be under the same High/Medium Voltage cabin (potential REC borders identified by the national DSO <a href="#">here</a>)</li> </ul>	
<p>727/2022/R/eel - <b>ARERA</b> (Regulatory Authority for Energy, Networks and Environment)</p>	<ul style="list-style-type: none"> <li>- Main requirements indicated in the TIAD (regulation of widespread self-consumption) to access the incentives provided are as follows:</li> <li>- Shareholders or members can be natural persons, small or medium-sized enterprises (SMEs), as well as territorial bodies or local authorities, provided that, for private enterprises, participation in the renewable energy community does not constitute the main commercial and industrial activity</li> <li>- The connection points forming part of the configuration must be located in the portion of the distribution network underlying the same primary substation</li> <li>- Production plants powered by renewable sources with power up to 1 MW can be included</li> <li>- Production plants powered by renewable</li> </ul>	



	sources must have entered into operation after the date of entry into force of Legislative Decree 199/21 of 8 November 2021, as well as production plants that entered into operation before the aforementioned date provided that their total nominal power does not exceed the limit of 30% of the total power held by the Renewable Energy Community	
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EC constituent elements	Requirement
Organisational (legal entities and available partnerships)	Legal form must be chosen amongst of the following non-profit legal entities: <ul style="list-style-type: none"> <li>• Not recognized association</li> <li>• Recognised Association</li> <li>• Holding foundation</li> <li>• Cooperative or consortium</li> </ul>
Technological requirements	<ul style="list-style-type: none"> <li>- Most common: small sized renewable energy generation system (photovoltaic panel)</li> <li>- Energy Management Systems</li> <li>- Dynamic computational simulations (hourly data smart meters)</li> </ul>
Community members	

### Update legislation

Since February 2023, the Italian Ministry of the Environment and Energy Security (MASE) presented to the European Commission the proposal for the executive Decree aimed at encouraging the spread of forms of self-consumption of energy from renewable sources, including RECs. The draft of the Decree (known as the MASE decree on renewable energy communities) is waiting for the approval of the EU Commission for entering into force and it is mainly focused on two measures: (i) a tariff incentive for the renewable energy produced and shared within a REC, and (ii) a non-refundable grant. The latter is foreseen as a refund of the renewable installation investments (up to 40%) for those RECs established in municipalities with less than 5.000 inhabitants.

### Barriers encountered

In Italy, there is support for setting up Energy Communities (ECs) through various initiatives and incentives. The Italian Ministry of Economic Development (Ministero dello Sviluppo Economico - MiSE) rewards shared energy from ECs by providing a financial incentive of 100 €/MWh for collective self-





consumption groups and 110 €/MWh for Renewable Energy Communities (RECs). This financial reward encourages the participation and establishment of ECs in the country.

Additionally, the Regulatory Authority for Energy, Networks, and Environment (ARERA) recognizes the benefits of shared energy in terms of cost savings for companies in energy grid management. As a result, ARERA provides a reimbursement of around 8.5 €/MWh to companies, reflecting the estimated cost savings associated with the use of shared energy from ECs.

To further support the setup of ECs in Italy, ENEA (Ente Nazionale per l'Energia Alternativa) has developed a tool that assists interested citizens in evaluating the economic feasibility of EC projects ([Recon](#)). This tool provides guidance and economic evaluation, helping individuals assess the viability and potential benefits of establishing an EC.

One of the most significant barriers was the legal and administrative complexity. In the case of a large municipality like Milan, there were numerous legal complications associated with joining or setting up a new legal entity such as an EC. The existing legal personalities outlined in the civil code did not perfectly align with the specific needs of Renewable Energy Communities (RECs). Additionally, the national regulatory framework was incomplete and intricate, resulting in delays in the development of EC initiatives.

Another obstacle was the lack of clear indications regarding incentives and pricing recognised by the national authority. This lack of clarity impeded the ability to structure a robust financial and economic framework for Italian RECs. The absence of clear guidelines regarding incentives and prices created uncertainty and made it challenging to attract and engage participants in the ECs.

In terms of social barriers, there was difficulty in engaging individuals to become active participants in Energy Communities. The economic incentives offered were perceived as too low, making it less enticing for people to join. It is essential to develop targeted stakeholder engagement actions that can effectively demonstrate the societal and civic added values of participating in ECs, beyond just economic benefits.

Addressing these barriers requires comprehensive efforts to streamline the legal and administrative processes, clarify incentives and pricing mechanisms, and implement effective stakeholder engagement strategies. Overcoming these obstacles will facilitate the successful establishment and engagement of Energy Communities in Italy, fostering a more sustainable and participatory energy landscape.



## 4. Policy Recommendations

The following policy recommendations will be divided into two parts: EU level and national/local level. The first part will recommend changes in already existing EU legislation or offer suggestions for further changes that could benefit the deployment of ECs. Conversely, the second section provides national and local policymakers' recommendations on how to best transpose the EU legislation (in particular the Renewable Energy Directive and the Electricity Directive) into national legislation to support the rollout of ECs in their countries.

The recommendations are based on the encountered barriers, interviews with project partners, and a questionnaire with the project partners.<sup>12</sup>

### 4.1. Recommendations on EU level

#### 1. Funding and Financial Support:

- Establish dedicated funding programs to support the establishment and expansion of energy communities. This can include grants, loans, and venture capital investments targeted specifically at community energy initiatives. Specifically, loan guarantees can be a good way to mobilise private investment.
- Encourage the involvement of financial institutions and investors in supporting energy communities by providing financial incentives and developing innovative financial models such as crowdfunding platforms or community investment schemes.
- Educate financial institutions about the secure return on investment associated with energy communities. Provide information and resources that highlight the financial viability and long-term benefits of investing in energy community projects, ensuring easier access to mortgages and financing for prospective communities.

#### 2. Ensure base definition of Energy Communities, while allowing flexibility to adapt to local needs.

- Provide clear and defined rules that govern the implementation of energy legislation across all countries, vide clear and defined rules that govern the implementation of energy legislation across all countries, minimising delays, and avoiding glaring discrepancies in national legislation. However, the definition should be broad enough in order for Energy Communities to adapt to local needs and beyond just energy related matter (E.g. energy communities with a focus on ecology and democratic agency).

#### 3. Empower Citizens and Increase Knowledge:

- Develop and disseminate clear guidelines on Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs) to empower citizens. Increase public knowledge and awareness through educational campaigns, workshops, and online resources, enabling citizens to actively participate and make informed decisions regarding energy initiatives.

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<sup>12</sup> The Questionnaire can be found in the Annex.



4. Regulatory Framework allowing the participation of Industrial and Business Entities:
  - Develop a clear regulatory framework that allows the involvement of industrial and business entities in community energy projects. This framework should include incentives and support mechanisms such as financial incentives, grants, and tax benefits to attract participation from local industry and business sectors.
  - Establish partnerships between energy communities and industrial/business entities to foster collaboration and knowledge sharing. This can be achieved through matchmaking platforms, networking events, and workshops that facilitate interactions between community energy initiatives and potential industrial/business partners.
  
5. Ongoing Support for Community Energy Resources:
  - Extend support beyond the initial study phase to include ongoing assistance and resources for the management phase of Community Energy Resources (CERs). Establish funding programs, technical support networks, and capacity-building initiatives to help energy communities sustainably operate and thrive.
  
6. Development of Clear and Concrete Business Models:
  - Facilitate the development of clear, concrete, and actionable business models for energy communities. This can be achieved through the provision of support and guidance in the form of templates, case studies, and expert advice on different aspects of community energy projects, including financing, governance structures, revenue models, and risk management.
  - Establish a dedicated platform or database where energy communities can access and learn from existing successful business models. This will help prospective communities in their planning and decision-making processes.
  
7. Flexible Consumer Rights:
  - Adapt consumer rights to allow for greater flexibility, enabling long-term participation in energy community projects and enhancing the roll-out of ECs. Foster an environment that supports consumer engagement, choice, and adaptability, ensuring that consumers have the freedom to actively participate in and benefit from energy community initiatives.
  - Allow members of energy communities to voluntarily waive their rights to security of supply, freedom to switch suppliers and bankruptcy of their supplier (= their own energy community).
  - At the same time, to alleviate the risk of homeowners to set up energy communities, members of the energy community would need to remain members for a fixed period if certain targets and conditions are met.
  
8. Integration of Energy Sufficiency:
  - Expand the concept of energy efficiency to include energy sufficiency, which focuses on determining the sufficient energy use for different user types and covering basic needs related to the built environment. This can be achieved through setting energy



sufficiency targets and providing guidance on efficient energy use practices tailored to different user types (e.g., households, businesses, industrial facilities).

- Develop educational and awareness campaigns to promote energy sufficiency within energy communities. This can include providing information on energy-saving measures, encouraging behaviour change, and highlighting the benefits of energy sufficiency in terms of cost savings and environmental impact reduction.

#### 9. Explicit Link between Energy Communities and Addressing Energy Poverty:

- Explicitly link the concept of energy communities with addressing energy poverty. As vulnerable households often lack the financial means or are living in circumstances that make it difficult to participate in RECs (such as language barriers and unsociable work hours), special efforts are needed to reach this group. Develop policies that prioritise the participation of vulnerable and disadvantaged groups in community energy projects, ensuring that they have access to affordable, clean energy solutions.
- Allocate dedicated funding or grants to support energy community initiatives that specifically target energy poverty alleviation. This can include measures such as providing financial assistance for energy efficiency improvements, facilitating access to renewable energy technologies, or establishing energy cooperatives in disadvantaged areas.

#### 10. Active Involvement of European Authorities:

- Facilitate active and consistent involvement of European authorities in the establishment of energy communities. Foster collaboration and co-creation between authorities and community members to develop regulations and policies that are well-suited to the unique needs and goals of energy communities.

#### 11. Specific Support for Energy Communities in special circumstances Alpine Energy Communities:

- Recognise the unique challenges and opportunities faced by energy communities in specific circumstances, such as Alpine regions, islands and remote rural areas. Develop tailored support programs that address the specific needs of these communities, such as funding for situation-specific renewable energy technologies or capacity-building initiatives focused on addressing technical and logistical challenges in these areas.
- Foster collaboration and knowledge exchange among these specific energy communities through the establishment of regional networks, workshops, and conferences. This will enable communities to learn from each other's experiences, share best practices, and collectively tackle common challenges.

#### 12. Disseminate European Directives and Clean Energy Package:

- Implement comprehensive dissemination strategies to ensure widespread understanding and awareness of European directives and the Clean Energy package legislation. Encourage Member States to actively communicate and promote these directives to expedite their implementation and alignment with EU climate objectives.

These recommendations aim to promote the establishment and success of energy communities while aligning with the European climate objectives and the transition towards a carbon-neutral future.



## 4.2. Recommendations on national level and local/municipality level

1. Comprehensive and Supportive Regulatory Framework:
  - Develop a comprehensive regulatory framework that goes beyond the implementation of EU Directives. This framework should address the specific challenges and opportunities related to Energy Communities, including energy law, real estate law, grid connection, and consumer protection.
  - Conduct regular reviews and evaluations of the legal framework to ensure its effectiveness, adaptability, and alignment with the evolving energy market and technological advancements.
2. Financial, Administrative, and Logistical Support:
  - Provide prospective Energy Communities with sufficient financial, administrative, and logistical support to facilitate their establishment and operation. This can include grants, subsidies, technical assistance, and capacity-building programs tailored to the needs of each community.
  - Establish dedicated support centres or agencies that offer guidance, resources, and expertise to assist Energy Communities in navigating financial aspects, administrative procedures, and logistical challenges.
3. Incentives to Become Prosumers:
  - Provide incentives for individuals and businesses to transition from self-supply to becoming prosumers within Energy Communities. This can include financial incentives, tax benefits, and simplified administrative procedures for connecting to the grid, installing renewable energy systems and sharing energy.
  - Develop awareness campaigns to promote the benefits of prosumption and participation in Energy Communities, highlighting the potential cost savings, environmental impact, and community engagement opportunities.
4. Clear and Actionable Business Models:
  - Support the development of clear, concrete, and actionable business models for Energy Communities. This should include addressing the economic dynamics resulting from the phasing out of net-metering, negotiating fair and transparent agreements with energy suppliers, and evaluating potential business models for community-based energy trading.
  - Offer guidance, templates, and case studies that provide practical examples and advice on revenue generation, cost management, pricing structures, contractual obligations, and grid fees within the context of Energy Communities.



#### 5. One-Stop Shop Support:

- Design and establish a one-stop shop support system to assist Energy Communities, especially in dealing with legal issues. This support system should provide comprehensive information, guidance, and assistance to help communities navigate legal requirements, permitting processes, and contractual obligations.
- Collaborate with legal professionals, industry experts, and relevant stakeholders to create a centralised resource hub that offers accessible and up-to-date information on legal aspects related to Energy Communities.

#### 6. Full Transposition of Directives:

- Ensure the full transposition of the European Directives 2018/2001 and 2019/944 on common rules for the internal market for electricity and the Renewable Energy Directive (RED II) into national legislation. This will provide a clear legal framework for the operation and regulation of Energy Communities, facilitating their establishment and growth.
- Emphasise that the obligation, formulated in these European Directives to “provide an enabling (regulatory) framework to promote and facilitate the development of renewable respectively citizen energy communities “, requires that not only the national energy acts but all legislation currently obstructing the development of energy communities should be amended.
- Provide guidance and support to national and local authorities in implementing the Directives, including the development of relevant regulations, standards, and reporting mechanisms.

#### 7. Flexibility and Demand-Side Flexibility:

- Introduce demand-side flexibility into the energy market for Energy Communities engaging in aggregation activities. Develop policies and mechanisms that encourage communities to optimise their energy consumption and production profiles, allowing for cost savings and improved grid stability or maximizing sustainable impact, all depending on the core values of the energy community.
- Remove barriers that hinder Energy Communities from leveraging flexibility opportunities. This can include simplifying administrative procedures, streamlining regulatory requirements, and ensuring transparent and fair market access for community-based flexibility services.

#### 8. Grid Capacity Enhancement:

- Invest in grid infrastructure and capacity enhancements to accommodate the integration of Energy Communities and increased renewable energy generation. This includes upgrading and modernising the electricity grid to support bidirectional energy flow, facilitating seamless integration and reliable operation of Energy Communities.

#### 9. Enhanced Outreach and Communication Strategy:

- Develop and implement an enhanced outreach and communication strategy to reach and include more vulnerable households in Energy Communities. This can involve



targeted awareness campaigns, information sessions, and collaboration with local community organisations, social welfare agencies and social housing corporations to ensure inclusivity and accessibility.

#### 10. Specific Status for Energy Communities:

- Grant Energy Communities a specific legal status that differentiates them from traditional energy suppliers. This recognition should come with tailored regulatory frameworks that account for the unique social, societal and environmental characteristics and objectives of Energy Communities, enabling them to operate more efficiently and effectively.

#### 11. Alternative Entry Points for Energy Community Formation:

- Offer a framework that allows for the establishment of energy communities through alternative entry points beyond localised communities. This can involve leveraging existing social networks and established groups such as fire brigade associations, sports clubs, and communal spaces where individuals and households already gather. Additionally, many owners or tenants live in structures that already meet the legal criteria for establishing a REC and represent a great opportunity for upscaling the concept.
- Provide guidance and support to these alternative entry points to facilitate their transition into or expansion with energy communities. This can include technical assistance, financial support, and capacity building programs tailored to the specific needs and characteristics of each group.

#### 12. Implement regulatory sandboxes

- Allow for exemptions from legislation and regulations, where the development of energy communities is obstructed by unforeseen barriers or where the development of new technologies enable energy communities to fulfil their objectives and role better or more efficient or effective.



## 5. Conclusion

The NRG2Peers project has tested and evaluated the concept of Energy Communities in four countries, all characterised by different regulative, technical, organisational and social requirements. Throughout the project's timeline, a lot has already changed when it comes to both EU and national regulation. The concept of Energy communities is significantly becoming more recognised and spread in all countries. Nevertheless, based on all faced barriers and lessons learned there is still room for improvement both on EU and national/local level.

At the EU level, the primary focus centers on facilitating the development of clear and actionable business models for Energy Communities. This includes providing vital financial support, empowering citizens through education and awareness campaigns, fostering collaboration between European authorities and community members, ensuring flexible consumer rights, promoting energy sufficiency, addressing energy poverty, disseminating European directives effectively, and extending ongoing support mechanisms. These recommendations are not only aligned with European climate objectives, but also promote synergy among stakeholders, accelerating the transition towards a carbon-neutral future.

At the national and local levels, the key emphasis is on the efficient transposition of EU legislation, which serves as a foundation for supporting Energy Communities through locally tailored regulatory frameworks. These frameworks are vital for addressing the unique challenges presented by different regions. By adhering to these recommendations, policymakers can cultivate an environment that empowers Energy Communities to flourish, encourages the adoption of clean energy practices, and contributes to the overall enhancement of sustainability across Europe. This holistic approach seeks to harness the potential of Energy Communities to drive positive change and shape the future of energy consumption and production.





## 6. Annex

### Questionnaire

1. What was the initial goal for creating your Energy Community?
  - a. How well is this reflected in the EU framework on energy communities? What would you change?
2. Which barriers (legal, administrative, financial, social etc.) did you encounter with your Energy Community?
  - a. Which recommendations would you give to local/national policy makers that could overcome these current barriers?
  - b. Which recommendations would you give to European policy makers that could overcome these current barriers?
3. Looking ahead, which currently non-existent policies would you like to see implemented that would benefit your Energy Community?

