

## Article

# Cross-Case Analysis of the Energy Communities in Spain, Italy, and Greece: Progress, Barriers, and the Road Ahead

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**Abstract:** The current regulatory context for the energy sector and in which Energy Communities operate is fragmented and unclear in most EU countries. Although some initiatives have existed in Northern Europe for some time, this concept is considered relatively new. Indeed, EU legislation has only recently recognised Energy Communities through EU Directives 2018/2001 and 2019/944. In the framework of the Erasmus+ EU project EU-NETs (Grant Number KA220-VET-62435110), this qualitative research gathered information regarding the current adaptability and applicability of directives within national legislation, together with the legal and administrative frameworks in Spain, Italy, and Greece. Desk research and semi-structured interviews with 20 key informants from Spain, Italy, and Greece were conducted. Cross-case analysis was focused on the regulatory framework for ECs, its structure, and the models of governance. The results showed that the process of harmonisation of renewable energy legislation has not yet been completed in Southern Europe, with notable differences in the degree of implementation between countries.

**Keywords:** energy communities; renewable energy policies; governance; European Union; cross-national analysis



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## 1. Introduction

There is an open debate at the global scientific, political, and social level on the need for social transformation towards a model of more sustainable, resilient, and inclusive societies [1,2]. Indeed, this was one of the major challenges raised by 193 countries of the world at the United Nations General Assembly in 2015, before the signing of the 2030 Agenda agreement. In 2015, the United Nations (UN) approved the proposal of 17 Sustainable Development Goals (SDGs), with two linked to energy access and use: ensuring access to affordable, safe, sustainable, and modern energy for all (SDG7) and taking urgent action to tackle climate change and its effects (SDG13). In the European context, the European Climate Pact, as part of the Green Deal, embodies a commitment to engage citizens in climate action [3] by empowering them to make more informed consumption decisions and by implementing the Renewable Energy Directive (RED II) and

the Internal Electricity Market Directive (IEMD) that promote the development of a new role of the consumer as a prosumer [4].

Achieving these SDGs and mitigating climate change requires empowering communities to participate in energy transformation [2,5]. The recognition in the European Commission's Clean Energy Package of the right of local communities and citizens to play an active role in the energy sector led to the emergence of the concept of an *Energy Community* (EC), alongside new provisions on energy market design and frameworks for new energy initiatives [6,7]. Concepts such as *Renewable Energy Communities* (RECs) and *Citizens' Energy Communities* (CECs), which are included in the recast Renewable Energy Directive (REDII) and the Electricity Market Directive (EMD), open up the possibility of new forms of collective participation in the energy system. Even so, the mandatory transposition of these European regulations into national legislation has significant scope for country-specific provisions [8]. However, the heterogeneity of the organisational models and legal forms under which an EC can be configured [9,10], alongside the legal and administrative infrastructure available in each country, the bureaucratic challenges faced, the technical capacity of their administrative departments, the maturity of electricity markets and tariff schemes [6,11], among other factors, make an in-depth study necessary.

Furthermore, the energy crisis in Europe in 2022 has also highlighted the need to change the structure of the European energy sector. Faced with energy dependence on third countries and the inefficiencies of a centralised electricity system, the EC has the potential to contribute to reducing—even if not completely solving—these problems. Investing in renewable energy sources (RES) has a positive economic impact on a number of socio-economic indicators, including GDP, employment, wages, public revenues (through taxes), and capital formation [12].

The purpose of this manuscript is to explore how these two directives are transposed in three European countries, investigating the barriers and difficulties in initiating and maintaining the ECs, their legal, technical, administrative, and financial characteristics and requirements, as well as an overview of how the effective incorporation of citizenship into the development frameworks of these entities becomes a reality.

This manuscript, (BLINDED INFORMATION), is divided into three sections: the first section provides an overview of the concept of an EC and its development in the EU. A brief analysis of the conceptual and regulatory frameworks surrounding the creation and development of ECs is carried out in response to the questions: What is the degree of regulatory and administrative development and economic, technical, and socio-environmental interest in ECs at the EU level? What is the status of ECs in EU regulations and how are they defined? In the second section, a desk review and key informant interviews are conducted in Greece, Italy, and Spain. The aim is to clarify the regulatory, administrative, financial, and technical framework and the forms of governance and membership adopted in the ECs in these countries. The thread of this section is the following research questions: What regulatory framework guides the creation and development of ECs in Southern Europe? How are the EU directives transposed in each country? What are the peculiar technical, administrative, and financial forms and conditions for introducing the ECs in each context? What actors are involved in their creation and development and what roles do they adopt? How is compliance with EU guidelines ensured in terms of participation, autonomy, and decentralisation of power within these legal entities? The last section aims to provide an answer to the previous questions, through a comparison of the results of the three countries in terms of potentials and difficulties, and common possibilities and challenges in the development of ECs in Europe.

### 1.1. Conceptual and Regulatory Framework of Energy Communities

The energy revolution across Europe is putting individuals, communities, cities, and local authorities at the forefront, increasingly responsible for controlling and producing their own renewable energy, and for fostering the transition to fairer, more democratic, and decentralised energy [13]. In this transition, ECs have gained relevance as an innovation in

terms of the structure of the market, the available technology, institutions, and policies as well as the sociocultural situation [5,14].

Despite these rapid developments, the EC is a fairly new concept throughout Europe, defined by Roberts et al. in 2019 as “a way of ‘organising’ collective energy actions around open and democratic participation and governance and the provision of benefits for members or the local community” ([9], p. 4). Notable relevance is given to concepts such as membership, effective control, and autonomy in decision-making, as ECs are initiatives that are based on the idea of ensuring citizen participation in the energy system [6]. In particular, REDII introduces provisions and concepts that aim to allow ECs to compete on an equal footing with other market participants. Through concepts such as proximity of effective control of renewable energy projects and member autonomy, it is intended to give indications that facilitate the distribution of decision-making power among the members of the organisation [10,15].

Even though some initiatives, particularly in northern European countries, have been around for a long time, EU regulations recognised ECs just recently [9,14], with two directives: Directive EU 2018/2001 and Directive EU 2019/944. These directives consider two ways of understanding ECs: as a renewable energy community (REC) and as a citizen energy community (CEC) [8,11].

Directive EU 2018/2001, which establishes a common framework for promoting energy from renewable resources, defines an REC as a legal entity ([16], art. 2), 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, the shareholders or members of which are natural persons, SMEs, or local authorities, including municipalities. The primary purpose of this entity 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.

Directive EU 2019/944 defines a CEC as a new type of entity (art. 1) of a legal nature, which ([17], art. 2): is based on voluntary and open participation, and whose effective control is exercised by partners or members who are natural persons, local authorities, including municipalities, or small businesses. It has as its main objective the provision of environmental, economic, or social benefits to its members or partners or to the locality in which it carries out its activity, rather than generating a financial return, and participates in the generation, including that from renewable sources, distribution, supply, consumption, aggregation, and storage of energy or provision of energy efficiency services, charging services for electric vehicles, or other energy services to its members or partners.

The recent EU regulations have legitimised ECs, emphasising the need for technical and economic simulation tools to assess their competitiveness and environmental benefits. Studies have shown a shift within these communities from traditional fossil fuel-based power systems to renewable energy sources (RES), despite challenges such as high investment costs and operational complexities [10]. The subset of ECs known as renewable energy communities (RECs) focuses on localised generation which can put pressure on low-voltage grids, potentially leading to voltage violations and overloads, particularly in communities with high peer-to-peer energy trading. Therefore, while ECs and RECs offer promising paths for sustainable energy use and economic returns, they also present challenges that require innovative solutions in technology and management [10,18–20].

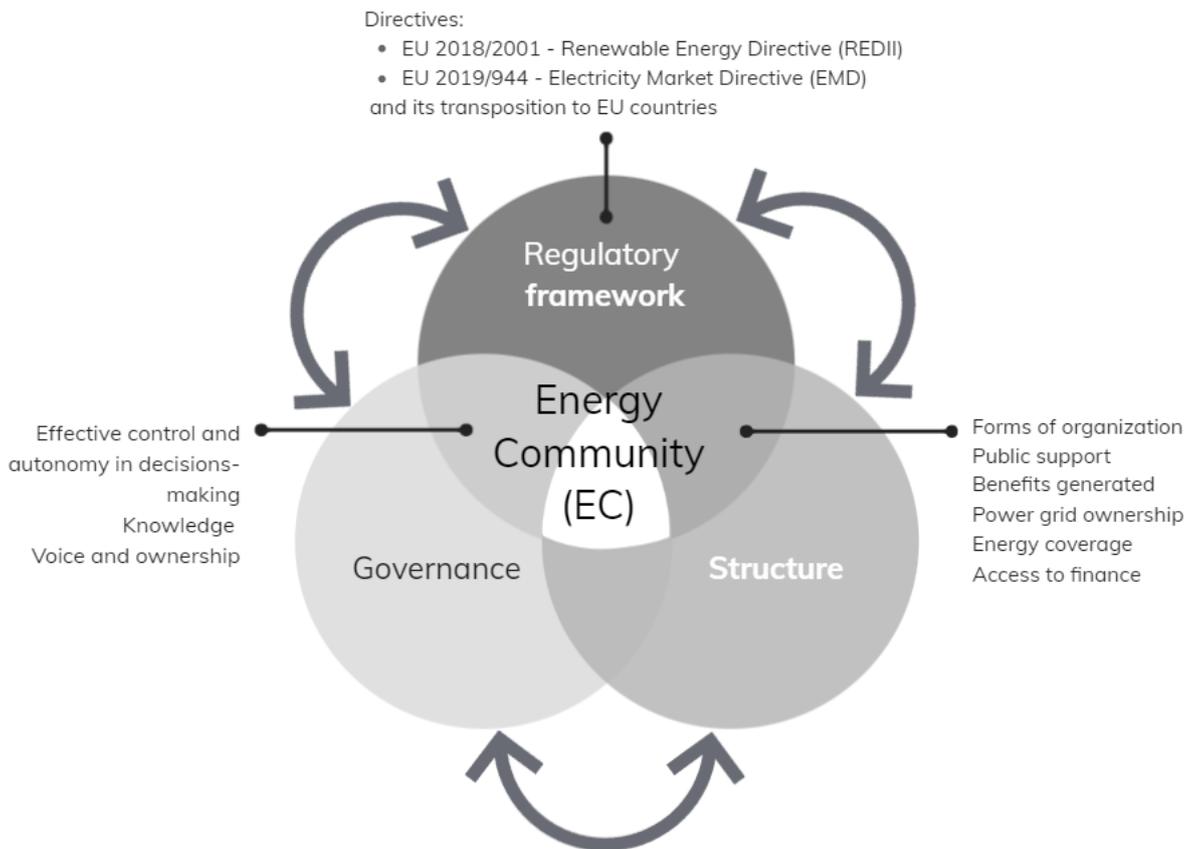
The literature about ECs provides international experiences, with successful examples, referring to barriers to the widespread adoption of the model or difficulties in transposing RED-II into national legislation [15,21,22]. Due to the diversity of ways of conceptualising and characterising ECs, the factors affecting the transition to EC have been studied from different points of view and approaches [22,23]. Lowitzsch et al. [22], for example, refer to innovative organisational and contractual arrangements (political and procedural factors, flexible character), local identities (geographical, technological, demographic and cultural diversity) and shared interests (openness to local actors, potential for energy sharing and

ownership structure). Another more simplified proposal is that referred to by Gjorgieveski et al. ([5], p. 1143), who establish a dichotomy between “non-technical enabling factors” (environments rich in financial opportunities with an adequate legislative framework and active local initiators) and “enabling technology” (infrastructures for network access). Sciullo et al. [14] differentiate energy and electrical power systems, energy policies and regulatory frameworks, and sociocultural attitudes towards the environment and cooperative models. Finally, the systematic review by Lode et al. [22] reveals, regarding the creation and operation of ECs, factors linked to the landscape (sociocultural, geographical, and technical), the operating regime (institutional, commercial, economic, and financial) and individuals and communities (cultural, historical, and psychological).

Despite their differences, authors agree in considering the complexity of the interactions between these factors [22], mediated by local identities and shared interests as they are rooted in geography, history, and culture [5,14]. It makes it difficult to design innovative “one size fits all” solutions, although it is desirable to develop an “enabling framework” generalised to all countries ([23], p. 3); while the RED II requires Member States (MS) to create an enabling framework to promote and facilitate the development of ECs, and lists a minimum set of elements that MS must address, there is also a certain amount of freedom in deciding on the legislation, policies, and measures they employ for national ECs to flourish. Nine key elements have been included in the RED II enabling framework that MS must address (art. 22.4 RED II), of which in this document we focus on those related to (a) regulatory and administrative barriers; (d) fair, proportionate, and transparent procedures, including the relevant fees, charges, and taxes, ensuring that they contribute, in an adequate, fair, and balanced manner, to the distribution of the overall costs of the system; (f) participation accessible to all consumers, including low-income or vulnerable consumers; (g) tools to facilitate access to financing and information; and (i) rules that guarantee equal treatment and non-discrimination of consumers who participate in the EC.

Multiple studies have considered the regulatory and legislative aspects affecting the constitution of ECs, as well as economic, administrative, technical, and environmental issues [22]. The social dimension is still underrepresented [10], although a growing number of studies are showing the relevance of these entities to “enhance the social capital and human resources of the community of reference” [24], analysing the governance models that are configured in the ECs to respond to the need to convert citizens into energy market actors who act as prosumers [6], exercising effective control within the EC of which they are part and having autonomy in decision-making ([15], p. 10). To achieve this, knowledge and active participation that ensures members have a voice and feel part of the entity are essential [25,26].

Considering these contributions, alongside the three dimensions identified in the model of Sciullo and collaborators [14], in which they refer to key factors that can activate the development of ECs, Figure 1 presents three interrelated key points that are examined in this paper when studying ECs and looking for common points and divergences between countries: (a) the regulatory framework for ECs, where we will start from the European guidelines to briefly analyse their transposition in the three territories studied; (b) the structure, investigating the similarities and differences in terms of the forms of organisation, public financial support and other items, the benefits generated, ownership of the network, and access to financing sources, in order to appreciate similarities and differences in the three environments, and finally, (c) governance models, paying particular attention to the way in which effective control and autonomy in decision-making within the initiatives are guaranteed, as well as citizen participation and the role it occupies in the different phases of their creation and development compared to expert, technical and political knowledge.



**Figure 1.** Three key axes for analysing the scenario for EC development. Adapted from [14]. © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/> accessed on 11 September 2023).

### 1.2. Contextual Framework of the Study: Energy Communities in South European Countries

The recent emergence of the EC concept in Europe and its regulatory development make necessary an adequate approach, which allows for analysis of the technical, regulatory, and social aspects, taking into consideration the peculiarities of the different countries; more specifically, Italy, Spain, and Greece present an environment for the development of ECs with interesting similarities and complementarities in terms of the institutional environment, the type of ECs that could be created, and the barriers to their effective development. Particularly interesting is the inclusion of the development of the ECs in the national plan of these three countries for the Next Generation EU [27], a recovery plan focused on the economic and social transformation of the European context, focusing on health, energy, and digitisation.

## 2. Materials and Methods

Desk research and semi-structured interviews ( $n = 20$ ) with stakeholders (policy makers, key persons in energy market regulations, representatives of existing ECs, etc.) were carried out. To do so, internal guidelines were developed to describe the specific information to seek, and a guide for interviews was designed (Table 1).

Semi-structured interviews were conducted with persons involved in the creation and development of ECs in the three target countries. Due to different support strategies and the uneven degree of development of the EC value chain in different regions, there are stakeholder profiles that are easier to access in some countries than in others. Consequently, two interviews were conducted with Italian public institutions; four interviews were conducted with EC experts in Greece, together with a policy maker and a social cooperative

that promotes ECs; moreover, six interviews were conducted with Spanish ECs, four with second-degree entities that promote, advice and/or give services to ECs, as well as two interviews with partners of European projects and one with the Head of the Solar Energy and Self-consumption Department of IDAE (Table 2).

**Table 1.** Interview questions \*.

Topic	Questions
Legal form of EC	What is the legal form of your EC? Is your EC for-profit or non-profit? When was the EC formed?
Membership and governance	How many members does your EC currently have? What is the regional distribution among your members? What is the gender distribution of your members? How is your EC governed?
Energy-related issues	Does your EC produce electricity? If yes, what technologies does it use? What is the installed capacity of the respective RES technologies? How much energy does your EC produce? Is the energy produced sold or self-consumed? Does your EC produce heat? If yes, what technologies does it use? Is your EC active in energy efficiency? And, in electromobility?
Barriers to starting up your EC	Please comment on the basic problems you faced in starting up your EC.
Barriers to developing a project	Please comment on the basic problems you faced in developing a project. Did your EC have any privileges regarding the development of a project (e.g., priority in authorisation or grid access)?
Barriers to financing a project	How are projects financed by your EC? Please mention the main barriers to financing a project.
Proposals for improvement of regulatory framework and investment environment	What are your proposals for improving the regulatory framework and investment environment in your country?

\* Acronym: EC—Energy community.

Due to both the health recommendations in the last phase of the COVID pandemic, as well as the geographical distribution of the different interview partners, the interviews were held online. This strategy also facilitated the incorporation of a larger number of profiles into the sample focusing on professionals from different fields (legal, social, political, technological. . .), who in these first phases are guiding the transformation of the energy model in the three countries. In addition, some interviews with citizens to gather their experience as future empowered agents of the energy system were conducted (fourteen of the Spanish interviews).

All information provided by the actors was subject to a confidentiality agreement, in the framework of the Erasmus+ EU project EU-NETs (Grant Number KA220-VET-62435110).

**Table 2.** Interviewed stakeholders \*.

Country	Region	Type <sup>a</sup>
Greece	Athens	Certified social cooperative Non-profit EC
		Policymaker
	Crete	For-profit EC
Italy	Rome	Public body
		Public company

Table 2. Cont.

Country	Region	Type <sup>a</sup>
Spain	Valencia	Non-profit EC For-profit entity
	Basque Country	Non-profit cooperative Researcher on an EU publicly funded project
	Canarias	Non-profit association
	Galicia	Non-profit association Non-profit ECs Public institution
	Cataluña	Non-profit cooperative Non-profit cooperative Non-profit consultancy <sup>b</sup>
	Madrid	Member of a private company and EU public-funded project
	National body	Policymaker

\* Acronyms: EC—Energy community; EU—European Union; ENEA—Italian Agency for New Technologies, Energy and Sustainable Economic Development; GSE—Gestore Servizi Energetici. <sup>a</sup> Further information related to the ECs that participated in the study can be found in the following links: <https://sapiensenergia.es/>; <https://lapalmarenovable.es/>; <https://www.arousaentransicion.gal/>; <https://buchabade.com/>; <https://www.tameiga.com/>; <https://minoanenergy.com/en/>; <https://hyperion-community.gr/en/>; <https://electraenergy.coop/>. Also, an updated list of currently active energy communities is available on the website of rescoop.eu <https://www.rescoop.eu/>. <sup>b</sup> It is a so-called 2nd-degree entity since it is not an entity that is constituted as an EC but rather in its actions it is a promoter of the creation of such Ecs.

### 3. Results

#### 3.1. Case 1. Analysis of Energy Communities in Greece

As of October 2022, Greece had not fully adopted EU Directives 2001/2018 (RED II) and 944/2019 (internal market for electricity), but the government is in the process of implementing the provisions. However, regulations related to Ecs have been transposed to national legislation with Law 4513/2018. Specifically, the regulations that cover the basic guidelines of the EU Directives are Law 4843/2021 (art. 36–40), Law 4759/2020 (Par.2 art. 160), Law 4618/2019 (art. 8), and Law 4513/2018. The legal entity form of the EC in Greece resembles that of a cooperative society. Its scope is clearly described by national legislation, and the Articles of Association must comply with these regulations. The national legislation (law 4513/2018, art. 6) differentiates two types based on the criterion of sharing or not sharing dividends among its members:

- Non-profit Ecs: do not share the surplus use among their members, and
- For-profit Ecs: share the surplus use among their members.

The Greek NECP [28] refers to the role of Ecs in the energy transition but does not set any specific targets or specific regulatory and fiscal measures. In this sense, although most regulatory and administrative barriers to RECs have been removed, there is still room for improvements (e.g., authorisation could become much easier, especially when it comes to small projects such as those developed by Ecs). However, the administrative process for Ecs is the same throughout the country. Furthermore, there is an assessment of the time and cost needed for setting it up. The tax-related issues for Ecs are also clear.

The EC complies with the EU directive to be “subject to fair, proportionate and transparent procedures” and, in most cases, there is positive discrimination in favour of the EC. In fact, they have priority access to networks in Greece. There is a list of priorities established by Ministerial Decision YPEN/DAPEEK/28857/1083. OJ 940B/20.3.2020, which gives priority to Ecs, especially those aiming at self-consumption. The support scheme is through feed-in tariffs. In addition, Ecs typically offer lower guarantees during the stages of authorisation. Nevertheless, financing is a major problem, especially for those aiming at self-consumption. They face difficulties in financing their projects since

some banks are only keen on financing Ecs aiming at selling all their production through a contract with the electricity market operator (through feed-in tariffs). Added to this is a problem arising from the national framework related to virtual net-metering and energy suppliers of EC members. More specifically, virtual net-metering by Ecs can only be exercised if all members have a contract with the same power provider. New regulations allow representation by different power providers but only on non-interconnected islands. This is not the case in mainland Greece. Moreover, there is no additional regulatory support for the addition of energy-related social innovations to the basic framework. Regional or local governments do not make available any public areas for its promotion. The most significant development in their funding in the lignite areas of Greece is the inclusion of financial support in the Just Development Transition Program (PDAM) 2021–2027 [29]. Other examples of support programmes, although there is not anything specific yet, are those from the Next Generation EU.

There are no social barriers or misinformation about the environmental or economic impacts of Ecs. It can be considered that this concept is well-received by the Greek public. Indeed, mapping reveals the presence of 986 Ecs of which 163 have already realised RES projects [30]. There are no statistics on the number of individuals participating in Ecs. However, considering the total number and the fact that the minimum number of persons participating in an EC (for-profit) is 15, it is estimated that ca. 15,000 individuals are participating in Greece. Their main characteristics can be summarised as follows:

- Forms of organisation: dispersed within the same administrative region. However, there is a proximity requirement that at least 50% of all members must live or own a property in the same region. In addition, they are categorised as non-profit and for-profit [25]. There are no data available about the share of non-profit and for-profit Ecs, but the vast majority are for-profit.
- Power grid owner: Ecs are not the owners of the power grid. Each member may hold, in addition to the mandatory shares, one or more optional shares, with a maximum participation limit of 20% in the cooperative capital, except for the local authorities, who can participate with a maximum of 50% (areas with population <3100 inhabitants), and 40% for the rest.
- Public economic support: they have not received any economic public support. However, public administrations can be members of Ecs.
- Size of the system per project: it ranges from 29.68 to 1000 kW. The average size is 697 kW.
- RES electricity covered by Ecs: the total installed power capacity equals 613 MW (as of May 2022).
- Heat/cooling covered by Ecs: In 2021, the photovoltaics owned by Ecs represented 12.7% of the total installed PV capacity in Greece. The share of heat/cooling covered by Ecs is only 0.1%.

The model of governance is that of a cooperative (Law 4513/2018 art. 1). An EC manager (referent) is nominated to represent the EC in all its activities. Each member, regardless of the number of shares it holds, participates with only one vote in the general meeting. The requirement is that there must be from 2 to 15 members to form an EC, depending on the nature and the non-profit or for-profit purpose of the EC. Furthermore, to guarantee effective control by its members, a proximity criterion is established (i.e., 51% of its members must have local ties with the district in which the EC is located) [15,21]. Finally, Greece is the only country—of the three analysed—and the first among the European context that has included in its legal framework the reduction in energy poverty as a priority objective of Ecs [25], through the implementation of actions that support vulnerable consumers and address the energy poverty of citizens living below the poverty line.

### 3.2. Case 2. Analysis of Energy Communities in Italy

The Italian regulatory framework for Ecs is composed of Law 162/2019 (art. 2-bis adopts arts. 21 and 22 of the directives on self-consumption of renewables and starts the

experimental phase); Resolution 318/2020 on the economic aspects of shared energy; the Decree of 16 September 2020 about incentives for the self-consumption of renewables; DMEA/EFR/6/2020, which defines the technical regulations for access to incentives for shared electricity (December 2020); the Legislative Decree of 8 November 2021, n. 199, which transposes the Directive (EU) 2018/2001 of the European Parliament and the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast); the Legislative Decree of 8 November 2021, n. 210m, which adopts Directive (EU) 2019/944 of the European Parliament and the Council of 5 June 2019 on common rules for the internal market for electricity, amending Directive 2012/27/EU (recast); and the updating of the technical regulations for access to incentives for shared electricity (April 2022). This regulation recognises both the RECs and the CECs, with a definition similar to that contained in the European Directives [31].

The Italian socio-legal context has been favourable to the adoption of community cooperatives as a valid way to set up Ecs, characterised by strong roots in the territory where their activities are located [25]. This is mainly due to the Italian tradition in the development of Ecs inherited from the historical hydroelectric cooperatives of the early 19th century in the northwest of the peninsula, as well as the growing interest in developing social initiatives based on citizen cooperation [24]. The main Ecs are realised by municipalities, without any regional differentiation. There are only non-profit Ecs. To qualify for incentives, their statutes must: (a) provide for the maintenance of the end-customers' rights, including the right to choose a seller; (b) uniquely identify a delegated entity responsible for the distribution of shared electricity to which the entities may also delegate the management of the payment and collection elements to the trading companies and the GSE; and (c) allow all parties to withdraw at one point in time and exit the configuration, without prejudice to the investment fees agreed in case of early withdrawal for distribution, which must in any case be fair and proportionate.

Concerning the compliance of Italian Ecs with fair, proportionate, and transparent procedures, the variable parts of the general system charges are applied to electricity withdrawn from public networks, including the shared one. A qualification system is envisaged only for Ecs that must access these incentives. Also, the 2020 NECP [32] refers to Ecs and promotes their development to support the economies of small municipalities, often rich in renewable resources, and to provide opportunities for the local production and consumption of renewable energy in those contexts in which self-consumption is technically difficult.

Italy does not have an assessment of the time and cost needed to set up an EC, although it does have information that clarifies the fiscal issues involved in starting one up. The projects developed by Ecs do not have priority access to grids in Italy, nor any benefit/advantage in terms of project authorisation. Nor is there any other type of incentive; indeed, they experience difficulties in financing their projects. Therefore, the operators are asking for the establishment of a Guarantee Fund for the Ecs to guarantee partial insurance for the loans granted by the banks for the realisation of these configurations. Further, the main regulatory and administrative barriers to Ecs are open questions to which operators expect specific answers concerning its legal form, energy sharing, ownership, existing plants, incentives, and proximity as well as the role of the DSO. In terms of incentives, Decree-Law 34/19 March 2020 provides for "incentives for energy efficiency, photovoltaics and electric vehicle charging stations" (art. 119). However, these tax incentives are for "documented expenses borne by the taxpayer, incurred from 1 July 2020 to 30 June 2022". Initially, it was until 2021 and was extended until 2022, but in the last update of the rule, it has not been extended again [33], so this type of expenditure, as of today, would no longer have these incentives.

Regarding proximity, also related to technical barriers, there is a maximum distance between associated users. That is, energy can be shared within the same market zone but to access the incentives, customers must be connected to the same primary substation. Also, an EC can carry out both a low and a medium-voltage grid connection. The proximity

condition necessary for its establishment is satisfied when the holders of connections on the low-voltage electricity network are powered by the same medium/low-voltage transformer substation [31].

A mapping of the Italian context shows 20 Ecs according to the national regulations [34]. The number of individuals who participate in the Ecs depends on their nature. The most usual form of energy community is the cooperative, with the community cooperative standing out, as indicated above. The Italian cooperative model proposes the development of common actions under a multilevel governance system, which creates social and economic value through the production and management of community goods in a participatory and inclusive manner [24]. Generally, the community is built by a municipality for which the energy produced is used to meet the energy needs of municipal users (e.g., gym, town hall, school), and the surplus is exchanged with the families participating in the community. In these initiatives, public administrations undoubtedly play a key role as facilitators of these projects, offering assets to develop the initiative, creating regulatory and financial framework conditions to facilitate it, or encouraging citizen participation [35]. Its main characteristics can be summarised as follows:

- Forms of organisation: Energy can be shared within the same market zone, but to access the incentives, customers must be connected to the same primary substation. Since the Ministry published the specific implementing decree of the DL199 of 8 November 2021, members had to be connected to the same secondary substation to access the incentives. In 2023, there are still delays in the publication of the regulation and financial support measures [35].
- Power grid owner: production facilities must be available to the community, not necessarily owned.
- Public economic support: Italy's National Recovery and Resilience Plan 2021 (PNRR) [36] specifies the financial resources reserved for the energy transition, with at least 37% of its total resources to be earmarked for this purpose; namely EUR 2.2 billion in investment for the promotion of renewable energies through support to Ecs and collective self-production structures (Component 2).
- Use of technology: Ecs often use solar or hydroelectric power.
- Size of the system per project: detailed information can be found in the Orange Book [37].
- RES electricity covered by Ecs: the average size of the photovoltaic system is between 20–50 kWp. Ecs are using also mini-hydro.
- Heat/cooling covered by Ecs: Depending on the type of facility, it could be designed to cover 100% of the heating and cooling needs of the members. When more renewable energy is generated than is demanded by the HVAC/DHW systems, it is used to meet other energy needs.

The analysis conducted by Di Silvestre et al. [21] shows the attention given by the Italian government to the installation of REC generators and self-consumption by individuals, companies, local authorities, and local communities whose participation is not aimed at conducting a professional activity. Whether they are self-consumers acting jointly or participants in RECs, in any case, the right to choose the electricity seller and to leave the configuration at any time is guaranteed. This ensures that the consumer/prosumer has all the guarantees and rights related to their status to facilitate autonomous decision-making on their energy consumption [24]. The governance usually arises from stakeholders (condominium administrators' associations, business groups, or a group of citizens). The possibility of adopting corporate governance does not always depend on funded projects but on the intentions of the members to leverage local institutions to undertake energy and sustainable solutions. The absence of a specific national legal framework has led to the collective cooperative-based energy communities having a different character in the north and south of Italy. As a result, the various stages give rise to different governance models that emerge from an evolutionary process that feeds into the development of a new energy model [24,35]:

- Governance activated by experimentation with new energy-saving technologies in residential structures: this initial model can then be extended to the condominium and surrounding neighbourhood, giving back a greater degree of organisation to the actors or active volunteers who initiated the ideas.
- Governance based on a collective initiative: at a later stage, governance can lead to the creation of a collective body, a cooperative, a living lab, or a community association for governance itself. The roles of organisations already present in the area can be integrated with the governance principles adopted by the community. As a result, a governance entity is created or an existing one is renewed by integrating its objectives with those of a community governance entity.

All social and structural levels involved must necessarily come back to the delivery of the first stage of governance—a citizen interested in participating in the EC for his or her own use [31]. In short, such developments allow the development of a new form of wellbeing that satisfies economic needs but also involves citizens, public administrations, and companies more directly.

### 3.3. Case 3. Analysis of Energy Communities in Spain

The Spanish regulatory framework regarding Ecs is composed of the following documents: the Royal Decree 244/2019, which regulates the administrative, technical, and economic conditions for the self-consumption of electricity (RD 244); the Royal Decree-Law 23/2020, which approves measures in the field of energy and other areas for economic recovery (RD-L 23); the Royal Decree-Law 29/2021, adopting urgent measures in the energy field to promote electric mobility, self-consumption, and the deployment of renewable energies (RD-L 29); and the Royal Decree-Law 5/2023 (RD-L 5), which partially incorporates Directives 2018/2001 and 2019/944 into the Spanish legal system in aspects related to RECs and CECs.

In the Spanish regulations, the European Directives were transposed until the recent RD-L 5, in which the figure of the CEC was introduced, which until then was not contemplated in Spanish regulations. Previously, RD-L 23 introduced, in Article 4, a modification of Law 24/2013 (Article 6, Section “j”) of the Electrical Sector in which it added the same definition of REC as that observed in Directive 2018/2001. In contrast, the definition of CEC has not been transposed into Spanish law. This RD-L 23 has allowed the implementation of research facilities and introduces electrical storage facilities or the figure of the independent aggregator within the regulatory framework. After its modification by RD-L 29, the restriction on low-voltage connection (secondary transformer substations, generally below 11 kV) was eliminated and the distribution system operators (DSO) were forced to establish open information channels to address the complaints and questions from the promoters of self-consumption facilities.

The standard forms of legal entity to be adopted for Ecs are those laid down within the current legal system. This must allow them to operate as such, and at the same time, respect the conditions imposed by European legislation. According to the International Institute of Law and Environment (IIDMA) [38], the legal forms in Spanish law that are best suited to these constraints (open, voluntary, participatory, autonomous, with legal personality and capacity to act. . .) are cooperatives and associations. Two main types can be differentiated according to their means of governance: top-down initiatives (low degree of citizen participation, because it depends on the agreement between large energy companies and municipalities) or bottom-up initiatives (designed by partners with more ambitious statutory goals and more disruptive impact on the area).

No specific legislation indicating how sharing agreements should be made within Ecs exists. However, since many of the Ecs are based on the application of RD 244, an important part of its creation is to establish the sharing coefficients between the members. These can be dynamic with an hourly distribution (Order TED/1247/2021) and can be stipulated based on: “the power to be billed by each of the participating associated consumers, the

economic contribution of each of the consumers to the generation facility or any other criteria agreed among them”.

Regarding the compliance of Spanish RECs with fair, proportionate, and transparent procedures note that, in a context in which the regulatory framework is not fully adapted, there are no specific targets for Ecs in the National Energy Poverty Strategy 2019–2024 or in the Just Transition Strategy [39]. Nor does the National Energy and Climate Plan (NECP) [40], which introduces for the first time the concept of Local Energy Communities (LECs, which encompasses both RECs and CECs), include specific objectives for this new figure, although it does indicate the action mechanisms and those responsible for carrying them out. It fosters the implementation of one-stop schemes and points out the need to simplify procedures in processes linked to local EC projects, with the aim of reducing administrative barriers. To facilitate access to finance and make information search easier, there are stimulus packages, launched by the MITECO in its Recovery, Transformation and Resilience Plan (PRTR) (Component 7), approved in June 2021, aiming at promoting and empowering the processes to create these communities [34]. However, this does not exempt them from the difficulties that Spanish Ecs face in financing their projects. Although different calls for public funding are being made available to Ecs, the lack of legislative definition creates uncertainty in this kind of project and makes it more difficult to access private financing. Therefore, cooperatives are placing emphasis on complementing investments with contributions from members. Regarding the role of the banks and other financing bodies, their involvement varies depending on the implementation strategy adopted by the Ecs; in line with the two main types described above, it can be differentiated:

- Top-down strategies: agreement between large energy companies and municipalities for creating shared self-consumption (mainly, using photovoltaic technology). Members pay a monthly fee in exchange for a percentage reduction in their electricity bills and have lower risks and therefore more financial backing (e.g., the agreement between CaixaBank and Edinor for implementing a business model).
- Bottom-up model: partners create the EC and try to bring in new entities such as municipalities or surrounding companies. They tend to have greater initial uncertainty and, therefore, less financial backing (e.g., the agreement between Fiare BancaEtica and Som Energia).

An alternative way of financing projects owned by Ecs in Spain is crowd-funding. Moreover, the ‘Next Generation EU’ funds in Spain are available through Order TED/1446/2021, of December 22nd, which approves the regulatory basis for the granting of aid under the programme of incentives for singular pilot projects for Ecs.

A mapping of the existing Ecs in Spain and their main characteristics enables the identification of 14 Ecs currently in operation and 32 more in various stages of implementation pending their complete consolidation and operational launch. Furthermore, on 30 May, another 46 received funding from the PRTR [34]. The number of members of the Ecs in operation varies between 20 and 300 users. However, most of them have around 50 members. These initiatives are located all over Spain, but there are more initiatives in the Basque Country, Navarre, and the Valencian Community (e.g., ORDER 14/22, 7 September, aid for the promotion and constitution of energy communities—G.V.), because they receive more support from the regional government. A summary of their main characteristics is:

- Forms of organisation: Most of the initiatives are starting their activity on the basis of RD 244, which allows them to be configured as shared electricity self-consumption entities [26]. Under this legislation, they can create a collective installation with an anti-discharge mechanism that prevents the introduction of non-consumed renewable energy into the power grid, or they can be constituted as a subject that feeds surplus energy into the electricity system. In the second case, economic compensation will only be provided if the requirements set out in the legislation (RD 244) are met, i.e., that the renewable generation system does not exceed 100 kW of installed power. Their most common activity is sharing electricity self-consumption, so their installations are configured according to RD 244.

- Power grid owner: some ECs have their own distribution network, but most of the installations use the distribution network for exchanging electricity between their users.
- Public economic support: Even though some ECs have been created under European projects, investment grants vary between 30 and 60% (CE IMPLEMENTA program—idea) depending on the technology mix used (electric, thermal, electric mobility measures, energy efficiency solutions, demand-side management improvement measures).
- Use of technology: Although a couple of ECs also share thermal energy through Biomass District Heating, most of the initiatives put their faith in the self-consumption of electricity generated by solar photovoltaic installations to start their activity.
- Size of the system per project: they can have one or more generation points with a total capacity between 16 and 125 kWp. The power-per-user ratio varies between 0.5 and 1.5 kWp.
- RES electricity covered by ECs: In most cases, it is still too early to tell, since they have only been in operation for a fleeting time, but estimates foresee coverage ratios of between 40 and 60%. That is, with these initiatives, approximately half of the energy consumed by the ECs is covered by renewable production in the surrounding area.
- Heat/cooling covered by ECs: In the case of thermal energy, they provide heating and DHW but not cooling. ECs cover all the thermal needs of these users.

The right to citizen participation in electricity generation was limited until the end of the last decade to mere self-consumption or the establishment of cooperatives, with no authority to generate electricity, but only to distribute and market [6]. With the implementation of Royal Decree 15/2018, the recognition of the right to self-consume electricity without charges, shared (collective) self-consumption among one or more consumers to take advantage of economies of scale, and the principle of administrative and technical simplification, especially in small electricity installations, favoured the incorporation of individuals into self-consumption entities by recognising the right to self-consume. This is how, progressively, and together with the development of subsequent regulatory developments, measures have been introduced that introduce the individual as a market actor, although this is not without ambiguities and conflicts of understanding that still require clarification [25]. For instance, while the national law says that CEs must be legal entities based on open and voluntary participation, autonomous and effectively controlled by members, no official document has been promulgated on how to establish governance within the statutes and how to promote the implementation of these principles. Although current legislation allows ECs to achieve a certain degree of autonomy from the electricity system, it does not yet allow them to empower themselves as players in the electricity market.

Most of the ECs in operation are adopting cooperative or participative association statutes [38], where each member has one vote, and working groups are created to address the objectives. For these projects, the assembly must approve the distribution of production percentages, the entry of new members or the approval of accounts. In many cases, the assembly creates a governing body, democratically elected among all members, in charge of executing their objectives and managing the community. The aim is to create autonomous entities that promote community wellbeing over individual benefits and are open to the inclusion of all individuals and entities aligned with their objectives.

### 3.4. Cross-Case Analysis of Information from the Three Target Countries

Upon individual analysis of the legal, administrative, financial, and technical development of ECs in Spain, Italy, and Greece, together with the study of their current characteristics, their potential, and limitations in terms of their constitution and their legal and social recognition, a cross-case analysis of the information is presented in this section.

Firstly, a comparison of energy policies and regulatory frameworks in the three countries is presented in Table 3, looking at the presence/absence and clarity of these issues.

**Table 3.** Cross-case analysis of energy policies, regulatory framework, and barriers for Greek, Italian, and Spanish ECs \*.

	Greece	Italy	Spain
Scope in legal framework	Clear	Unclear	Unclear
Tax issues	Clear	Unclear	Unclear
Most common form	Cooperative society	Cooperative	Cooperative or Association
Priority access to grid	Yes	No	No
National guide to set it up	Yes	Yes	No
Public funds	Not specific	EUR 2.2. billion funding for promoting REC and self-consumption and Resilience Plan	EUR 40 million in National Recovery, Transformation
Geographical proximity requirement of members	At least 50% of members must live or own a property in the same Region.	Members must be connected to the same secondary substation to have incentives.	Members' consumption points cannot be more than 2 km away from the generation point.
Geographical proximity of stations	Stations within the Region of headquarters.	Plants and consumers must be subject to the same MV/LV transformer substation in CEC and pertain to the same building in collective self-consumption schemes.	There is no specific regulation.
Power connection limits	Only when compensation from feed-in-tariffs.	It cannot exceed 200 kW to access the incentives.	Installed capacity under 100 kW and public energy auctions under 5 MW.
Grid connection	Low or medium voltage	Low or medium voltage	Low or medium voltage
Regulatory and administrative barriers	Same as private investments.	No, but there are issues that the regulations do not clarify.	No, but there are many issues that the regulations do not clarify.
Social barriers/misinformation	No	No clear system for measuring it	No clear system for measuring it

\* Acronyms: REC—Renewable Energy Community; CEC—Citizen Energy Community; MV/LV—Medium voltage/Low voltage; kW—kilowatt, MW—megawatt.

As can be seen in Table 3, the predominant legal entities adopted by the ECs of the three countries are cooperatives and associations.

ECs are unknown to a large part of Spanish society, although a substantial number of entities are promoting their creation. Even so, there are recognised difficulties related to their initial development, marked by the lack of clear and concise regulations, which also implies the existence of financial, administrative, and technical barriers. In the Greek case, there is no exposure to these constraints as there is a clear and specific description of the procedures related to the start-up and operation of ECs (registration, licensing, fiscal issues, network fees, etc.) in the national legislation, and information for their establishment is made available by the Centre for Renewable Energy Sources and Savings (a state agency) and by NGOs (such as Greenpeace). Problems related to the availability of the electricity space are noted in Greece, which underlines the growing need for grid infrastructure. In addition, financing is a major issue, especially for ECs aiming at self-consumption. In the Italian case, while there is no limitation in the definition of its legal framework, there is little clarity on its scope and a lack of information on ECs' economic and environmental impact—also noted for Spain. In Italy, there is still no clear system for measuring ECs' social impact, but RECs can be a means to reduce the persistent problem of energy poverty [41].

The mapping of the three countries has also made it possible to contrast the main figures related to the current state of the ECs (see Table 4). Note here that there are some ECs that are fully operational, and others are still in the process of consolidation.

**Table 4.** Greek, Italian, and Spanish ECs in figures \*.

	Greece	Italy	Spain
No. ECs	986 ECs (status May 2022)	20 ECs (+7 under definition)	14 ECs (+32 in process of consolidation)
No. ECs with implemented projects	163	N/A	46
No. individuals involved	≈15,000	It depends on its nature	20–300 users (≈50 most of them)
Technology	99.7% photovoltaic	Solar or hydroelectric power (mini hydro)	Solar photovoltaic and some share thermal energy (Biomass)
No. projects (until 2022)	879 projects	26 projects	46 projects
Average project size	697 kW (29.68–1000 kW)	20–50 kWp	125–16 kWp
Share of installed RES capacity owned by ECs in total installed capacity	12.7% total installed PV capacity	Can even reach 100%	Coverage ratios: 40–60%
Use of energy storage	No (legal framework in mid-2022)	Not always	Not currently

\* Acronyms: EC—Energy community; PV—Photovoltaic; MW—Megawatts; kWp—kilowatts peak; N/A—Not available information.

Finally, Table 5 focuses on the conceptualisation of governance types and models currently in place in each of the three target countries. While in Greece most ECs are identified as profit-making entities, in Italy (and implicitly in Spain) the opposite is the case. In Italy it is stated that “most ECs are cooperatives” but also that “only non-profit entities are admitted”.

**Table 5.** Energy communities’ typology and governance.

	Italy	Spain	Greece
Model of governance	Associations, business groups or groups of citizens	Cooperative/association	Cooperative
Categorisation for-profit/non-profit	No	No (Only one uses a for-profit scheme)	Yes
Members sharing agreement	Community is responsible for distributing electricity shared between its participants	No specified	Maximum participation limit of 20% in the cooperative capital (except for Local Authorities)
Voting	Not specified	One vote/member	One vote/member

Regarding governance systems in Spain, knowing that ECs represent a social concept, in which citizen co-ownership prevails, this issue still is in a phase of development, through its most prominent forms: cooperatives and associations, in which members act as agents involved in internal decision-making, ensuring the autonomy of the community. And in addition to empowering citizens, Spanish ECs are expected to be a tool to reduce energy poverty. In Italy, particular emphasis is placed on the understanding that the citizen is at the centre of the process and, under the idea of creating a collaborative and circular economy, all social and structural levels involved must necessarily feed back to the first stage of governance or to an interested citizen with his or her own interests in participation. The central focus of this question in Greece is on the reflection on how to favour ECs, faced with the risk of potential speculators whose objective is not in the real interest of citizens, who become victims of a system that does not implement actions to support vulnerable consumers and reduce energy poverty.

## 4. Discussion

This cross-case country analysis has allowed us to note the presence of certain similarities, as well as various stages in the legal, administrative, financial, and technological development of the three countries studied in Southern Europe. Three key points were observed for the functioning of the EC (energy policies and regulatory framework, structure, and governance), which we tried to address through a cross-case analysis between three target countries (Greece, Italy, and Spain). It only remains to address the potential and challenges facing the development of the EC model in Europe as well as how social innovation processes can be generated through the active participation of citizens in their implementation.

### 4.1. Possibilities and Common Challenges in the Development of ECs in Europe

ECs have enormous potential, as “contiguous processes of both energy transition and social innovation that can promote sustainable energy production and consumption practices” ([9], p. 4), provided they are driven by a regulatory and legal framework that ensures support, commitment, equality, and fairness with the ultimate aim of enabling the citizen to operate in the energy market and contribute to the transition, in an equitable manner [11,42]. In a context where prices in the electricity market have increased exponentially and it is common to see prices in the primary markets of the different European countries exceeding 200 EUR/MWh [43,44], ECs can prevent the impoverishment of citizens by reducing the impact of speculative energy price bubbles on their energy costs through producing part of their own energy needs close to their consumption points. Moreover, they also help to empower citizens who participate in the management of a key resource and, especially in the case of RECs, help to achieve environmental objectives [45,46].

This study shows that the regulations applicable to ECs need to be clearer, especially in Spain and Italy, where it has been decided to transpose the European Directives by copying them almost literally. This is an unfavourable legislative technique, since the Directives are an open regulation, while the national regulations of the different countries should be more specific. This implies that there are doubts about various aspects such as their legal form and whether commercial companies can be used. National legislation in different countries needs to specify these issues as bureaucratic delays in the publication of regulations, specific guidance, and financial support mechanisms continue to hinder further deployment of these entities [15,21,37]. In Greece, although most regulatory and administrative barriers to the creation of ECs have been removed, there is still room for improvement [25,47]. Greece presents a major evolution in its national regulations that has facilitated the rapid expansion of these entities in a relatively short period of time through the promotion of the social and solidarity economy since 2011 [47], placing it at the forefront of Europe in promoting the regulation of these entities in 2018 [6,25]. It is possible that this rapid growth is also related to the different forms that these entities can take on the Greek territory: for-profit and non-profit, or as The Green Tank [48] points out, public benefit energy communities (non-profit, mainly developed by local and regional authorities, and acting for the benefit of local communities) and non-public energy communities (whose purpose is to generate profit for their members). The latter are not present in the Italian and Spanish contexts, making their growth more gradual and linked to (and dependent on) national schemes that fund these proposals. Nevertheless, the Hellenic country faces the need for more grid infrastructure, and, in fact, its energy legislation is the only one that focuses on issues related to island-independent energy supply and energy poverty [26] as well as financing as long as the CE does not reach full self-consumption.

At a general level, although incentives exist to promote ECs, they do not solve the problems of financing the initiatives, mainly because the legal framework is not developed and there are significant barriers to their integration into the electricity system. The public administration can play a truly relevant role in the promotion of Greek energy communities in their various forms (e.g., neighbourhood communities seeking renewable energy supply, communities promoted by public corporations to supply the local population, farmers’

communities, etc.) [25,46]. In fact, the projects that have been developed so far in the three European contexts have been possible thanks to the promotion of public policies, especially by European institutions [25].

#### 4.2. Key Aspects of Governance and Citizen Participation in Implementing ECs

ECs play a key role in facilitating citizen participation in the energy system [6], understanding that individuals are the ones who need to self-organise and therefore government bodies should treat them as co-producers of solutions to the collective action problems they face and not as passive subjects [44]. As Walker and Devine-Wright, 2008 ([6], p. 3) stated “community energy projects are characterised by varying degrees of community involvement in decision-making and benefits sharing”. Nevertheless, the way in which citizens and enterprises join forces to develop collective initiatives occurs at different scales in different European countries. In fact, beyond defining effective control (including proximity requirements) and autonomy, there is no more precise definition of governance, co-ownership, and membership mechanisms for energy communities in the European legal framework [25].

Even so, the analysis of the categorisation (for-profit/non-profit) and the way in which citizens can own the power grid reveals certain differences in the way in which the governance model of ECs is configured in these three countries. Thus, while it is possible to adopt any form of entity if it can exercise rights and obligations acting in its own name, the most common forms of legal entity adopted in the three target countries are cooperatives and, in the case of Spain, also associations. This ensures that they retain their autonomy from individual members and other market actors who participate in the community as members or partners, or who cooperate in other ways (e.g., through investment).

The cooperative model is the most used in Europe as a whole, as it is backed by the experience and success of the electricity sector [9]. In the case of Italy, it has a special legal form, with no correlation with the other EU countries: community cooperatives. They are strongly linked to the territory and to the pursuit of local social and economic benefits [24]. In this type of entity, governance can arise from different stakeholders (associations, business groups, or citizens) that are organised around a community entity through which decisions are implemented. In Spain, in addition to cooperatives, associations are considered valid and suitable legal forms to respond to the legal indeterminacy still present in many European countries, as well as presenting similar principles of voluntary membership, democratic participation, effective control of their members and citizen involvement, which are key in the energy transition [45]. The principle of “one member, one vote” and the creation of working groups to meet the objectives reappears, but the autonomy available to citizens does not yet allow them to empower themselves as actors in the electricity market, nor has it been possible to boost technical and social innovation in this area.

In these territories, where there are still points that require clarification on how to statutorily establish governance, citizen wellbeing and citizens’ active involvement, alongside the participation of public administrations and other business entities, constitute a priority objective. The involvement of local authorities, DSOs, and prosumers or future consumers in all stages of an EC (from its design to its operation and maintenance) is key to its long-term operation [22]. In the case of Greece, its governance model is not completely different from that of Italy and Spain, as well as other European countries, where the participation of members is free, voluntary, and autonomous. Even so, it is possible to highlight in the Greek territory its priority attention to the search for mechanisms that reduce or prevent Greek ECs from becoming another tool at the service of the speculative electricity market [25,26,46], limiting participation in the cooperative’s capital, as well as establishing criteria of proximity that guarantee effective control by its members [26].

## 5. Conclusions and Implications of the Cross-Case Analysis for Further Research Activities

The analysis carried out in this paper revealed that even though the ECs are still incipiently growing and, consequently, still unknown to a large part of the public, efforts are being made at the government level and by civil cooperatives to develop these alternative forms of energy production and consumption. A large part of the effort invested is focused on clarifying regulations and streamlining bureaucratic processes, together with a more exhaustive study of the benefits that these entities generate for society in terms of economic, environmental, and social impact. Furthermore, the analysis has shown that the effective transposition of EU directives into national legislation, specifying the rights and duties of these entities and their members, is necessary to give legal certainty to the different initiatives that an EC can develop and at the same time facilitate the raising of private capital, as this reduces the perceived risk of these activities, which are new in many regions of Europe.

Regarding the participation of citizens as market actors [6], the countries analysed are undergoing a process of change towards collaborative governance models that incorporate heterogeneous actors in consensus-building around public policy objectives and priorities, although leadership remains in the hands of experts and advisors. More and better access to information and knowledge about the functioning and development of these entities needs to be made available to citizens, institutions, policymakers, and all industry associations and stakeholders in the energy sector, so that control can be shifted from experts and advisors to these actors, and to ensure that autonomy remains in the hands of their members and partners.

In summary, this study provides an overview of the legal, economic, administrative, technical, and organisational context of energy communities in three Southern European countries. In addition to the desk study, interviews with stakeholders in the different countries have allowed us to obtain advice and critical analysis from professionals working on the transformation of the energy model from different fields (legal, social, political, technological. . .). However, the variety of roles and profiles drawn upon in this study has been limited to this context of experts, policymakers, and representatives of entities related to the energy sector, including to a lesser extent the participation of citizens whose experience and perception of their knowledge, skills, and autonomy to act as empowered agents of the energy system gives an interesting projection to the study. Thus, the information provided reflects only a small part of a topic of growing relevance and importance in Europe as a whole. Nevertheless, the information gathered in this study has a wide potential for transferability to other energy sector contexts in the target countries, and the method adopted could easily be used in other EU countries to carry out a similar study.

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