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Mainstreaming Community Energy: Is the Renewable Energy Directive a Driver for Renewable Energy Communities in Germany and Italy?

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Abstract: By 30 June 2021, EU Member States were expected to transpose the recast Renewable Energy Directive (RED II) which includes provisions for renewable energy communities (RECs) and to develop an enabling framework to promote the development of RECs. Although there is a growing number of studies analysing the emergence of various forms of community energy, comparative studies investigating the transposition and creation of enabling frameworks for RECs in a multi-level governance (MLG) perspective are scarce. This article examines the transposition in Germany and Italy and compares elements of the respective enabling frameworks. Key methods include context and MLG analysis combined with methods of descriptive (legal) studies. Insights and participatory observations of the stakeholder desks established in the Horizon2020 project COME RES complement the spectrum of methods deployed. Although community energy development is more advanced in Germany, the transposition of the RED II provisions has been slow and piecemeal so far. Conversely, in Italy, RED II played a catalyst role; the transposition has been rather dynamic and encouraged a continuous growth of REC initiatives. Nevertheless, a widespread uptake of RECs requires structural adjustments of the governance system in both countries and attention to MLG as well as vertical policy coordination.

Keywords: European Union; renewable energy communities; community energy; energy policy; multi-level governance



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1. Introduction

1.1. Context

The evolution from an energy system based on centralised large power plants to a distributed energy production model based on renewable energy sources (RES) still represents a socio-political challenge in most European countries. On the customers' side, direct citizen participation, lower energy prices and access to private capital for RES plants and energy efficiency investments show already evident benefits [1]. Renewable energy communities (REC) can play an important role in achieving such goals, but their establishment requires a suitable regulatory framework that fosters the economic sustainability of community energy (CE) projects.

The European Union (EU) with its legislative package “Clean Energy for All Europeans” established a ground-breaking framework to trigger community-based bottom-up initiatives. The Renewable Energy Directive (2018/2001/EU) (RED II) provides definitions, rights, and duties of RECs and requires EU Member States to create enabling frameworks for their development. By 30 June 2021, Member States had to transpose those provisions. Although many countries have transposed the definitions of RECs literally, there is still a

lack of effective enabling frameworks. The progress made by pioneer countries is still far from the positive narratives that foretell a swift mainstreaming of CE [2], yet the creation of enabling frameworks is not a trivial matter and is confronted with several barriers. To overcome these, it is necessary to fine-tune the existing energy governance and infrastructure to accommodate RECs, especially in relation to incentives, subsidies, and access to energy markets.

Due to the actuality of this topic, challenges and chances offered by the transposition of the EU directives have been only partially investigated in the literature [3,4]. Only recently, however, studies have started examining the process of transposing the RED II provisions for RECs, both in single country settings [5–10] and in comparative analyses [3,11–18]. A number of comparative assessments have been performed in the frame of projects funded by the European Union, many of which focus on specific elements of the transposition process, e.g., legal definitions [15], rights or legal forms [9], economic viability [10], loopholes and positive developments [5] or selected elements of an enabling framework [11,18].

Although there is ample evidence that effective government coordination of sectoral policies along different levels of government is conducive for CE [19–22], comparative studies investigating the RED II transposition process and the creation of enabling frameworks for RECs in a multi-level governance (MLG) perspective are scarce. There are only very few studies addressing the transposition process, although not in a systematic manner [23]. The present article aims to address this gap by analysing in a comparative fashion the status of implementation of enabling frameworks in Germany and Italy, two EU Member States that share a tradition of CE, albeit with different energy policy backgrounds and historical development paths of their energy systems. Hence, the novelty of the article is threefold: it approaches the RED II transposition process from a Multi-Level Governance perspective, it scrutinizes recent policy developments in Germany and Italy and assesses the progress of the implementation of the enabling frameworks against the set of requirements specified by the RED II.

1.2. Purpose and Structure

The purpose of this paper is threefold: to illustrate how community renewable energy evolved in Germany and Italy so far, to analyse the progress of the transposition and implementation of RED II, and to assess to what extent governments in both countries managed to create an enabling framework to foster the development of RECs. In doing so, we focus on the electricity sector and place a particular emphasis on both the key drivers and barriers, and on the characteristics of the enabling frameworks that are required to boost the development of RECs. We undertake a critical analysis of specific national and regional measures in both countries and assess whether policies and measures are suitable to overcome barriers and whether their interaction and coordination are effective in establishing a robust enabling framework.

The article is structured as follows. In Section 2, we illustrate the theoretical approach which includes a brief literature review with a focus on multi-level governance in the energy field and an examination of recent works that link energy decentralisation and citizen-led energy initiatives. In Section 3, we elaborate on the research concept and explain materials and methods. In Section 4, we describe the regulatory framework for RECs provided by the RED II. Results of our comparative analysis are presented in Section 5. First, we refer to the historical development as well as barriers and drivers in both countries and then examine the transposition of RED II itself. In the discussion part (Section 6), we compare and scrutinize context, enabling frameworks, support scheme designs, policy instrumentation as well as policy coordination. Finally, in the concluding section, we present lessons for future policy, provide insights for the design and implementation of public policies in a complex multi-level perspective and highlight issues for future research.

2. Decentralisation and Bottom-Up Pathways as Key Elements of the Energy Transition: A Theoretical Approach

The transition to a low carbon economy requires new structures and organisational forms. Energy communities are important vehicles for reducing GHG emissions by distributed integration of RES and for providing positive environmental and economic impacts fostering regional and rural development.

The development of enabling frameworks calls for a multi-level governance (MLG) perspective and mutually reinforcing policies at different levels of government. The energy transition is a multi-level task and develops in multi-level institutional settings [24–27]. Following Rogge and Reichardt (2016), we assume that policy mixes are embedded in multi-level governance systems encompassing supranational, national, and subnational levels of governance [28]. From the multi-level perspective, government and firms, as well as other stakeholders, have a central role to play in system change and in the diffusion of low carbon technologies [29]. The development of more performing technologies in terms of reducing GHG emissions could accelerate this change but needs support for technology transfer initiatives, e.g., through the creation of public and private partnership [30]. An analysis based on MLG represents a good heuristic to describe the process of decision making in the energy field and to understand the dynamic nature of energy governance, because the so-called enabling frameworks are framed within a multi-level setting encompassing the supranational, the national and the regional/local level. MLG thus provides us with a coherent framework to understand inter-related processes of centralisation, decentralisation, fragmentation, as well as recentralisation and coordination of the energy system.

In recent years, national and subnational policymakers have increasingly adopted measures to stimulate decentralised renewable energy generation. Therefrom, a growing body of research analysed national pathways to a decentralisation of the energy system. In this context, renewable energy communities increasingly attracted interest. The proliferation of the literature on CE and citizen-led energy initiatives and the increasing number of projects financed by the European Commission within the Horizon 2020/Europe Research Programme are good indicators of the disruptive force that these bottom-up initiatives can represent for the energy transition in the EU.

The theoretical approaches found in the literature vary from typical transitional theory settings analysing energy innovation systems [31], to multi-level perspective and hindering effects of multilevel settings on the energy transition [25,32], to governance approaches that address institutional arrangements, the interplay of national and local government, and cooperation challenges [33]. Furthermore, sociological and acceptance studies dealt with renewable energy and bottom-up energy initiatives with respect to their social effects [34,35]. Over the years, the scholarly literature has encompassed various aspects of CE and citizen-led energy initiatives analysing different concepts and configurations, as well as barriers and drivers jointly with financial and legal aspects [36–41]. These bottom-up approaches involving local actors are regarded as a strong means to implement a more democratic and inclusive just energy transition [42–44]. Most analysts point out the strong link with democratisation and grass-root activities [45], where bottom-up initiatives driven not only by citizens as investors but also as consumers play a key role [46].

CE represents a social innovation [39] and is characterised by the combination of the collective and public interest [38]. Over the years, however, we have witnessed an evolution of the terminology. In an analysis of the scholarly literature based on the review of 405 articles, Bauwens et al. (2022) lamented ambiguity in the use of the notion of “community” and detected a variation changing over time in the meanings and the objectives pursued by communities. They observed a shift from the concept of community understood as “a process that emphasizes participatory aspects toward a notion of community primarily referring to a place” [47] (p. 1).

The factor that makes CE solutions congenial elements of the energy transition is that they combine energy generation, distribution, storage, and trading structures and are mostly owned locally. These schemes are instrumental to reach energy transition objectives

at local level for cost savings, emission reductions, energy efficiency and self-sufficiency. Due to the multi-energy character of these initiatives, there are complex physical and economic interactions. The push towards the circularity of the energy resource, which is therefore produced and consumed onsite, increases the awareness of citizens and local administration and encourages new initiatives in other sectors such as waste or water resource management.

There is ample evidence from a number of EU countries, not only pioneer countries like Denmark, Germany, Belgium and the UK where CE initiatives have been perceived as important actors in the transition toward low-carbon energy systems [48], but also from, e.g., Greece, France and Ireland, where advancement of CE has gone hand in hand with the enhancement of local environment and economy. Greece, for example, was rather fast in introducing EU legislation already in 2018 and CE has played an important role in decarbonizing society, and it has been reported that Law 4513/2018 represented a novel and integrated institutional intervention which enhanced social economy in the energy sector [49,50]. In Ireland, energy citizenship enjoys social and local acceptance, but in spite of infrastructural support, energy communities face difficulties to upscale their activities [51]. France introduced already in 2015 incentives in form of “participatory bonuses” to foster financial participation of local actors in renewable projects [52]. Sebi and Vernay who focused their analysis at the national and regional levels and examined CE initiatives by a typology governance type and project size highlight the role that CE can play locally and advocate the establishment of support schemes that reflect the multifarious roles of renewable community energy [52].

In this context, local energy communities play a fundamental role for the decentralisation of the energy systems and demonstrate the need for new modes of governance and market design. Indeed, the enhancement of CE calls for organisational and structural change, or at least fine-tuning of governance systems that today still revolve around centralised energy systems.

The development of energy communities has faced numerous limiting factors [6,33,39,53,54]. Challenges are met already in the planning stage due to increasingly complex planning and licensing procedures. Furthermore, the transition to auction systems in the electricity sector has negatively affected CE initiatives.

There are many suppositions about the motivation and which factors have triggered the development of CE. Hewitt et al. (2019) consider the interplay of the EU market liberalisation, generous incentives and the fall in the price of PV systems to have played a pivotal role in enhancing CE [39]. Other studies show that a complex interaction of material-economic, actor-institutional, and discursive factors help explain the emergence of CE initiatives [55]. Supportive governance is among the key success factors identified by research [19,48,56]. A number of studies refer to the important role of subnational policy actors, i.e., state, regional, provincial, and local governments in contributing to the development and the creation of success conditions [19,22,57]. In a recent literature review of challenges of CE examined through a policy lens, Busch et al. (2021) highlight directionality, experimentation, demand articulation, policy learning and coordination as key enabling factors [21]. Literature has been pointing out for a while that a consistent, coherent, and beneficial mix of policies from different bodies of legislation is required for a successful transition to more CE, whereby a policy mix encompasses more than just a combination of policy instruments, but also the processes by which such instruments emerge and interact at various levels of governance [28,58]. Several researchers emphasize the need for policymakers at all levels to help CE unfold [3,55,59]. However, only little is known about the interacting effects of different governance levels in promoting CE [20].

In Germany and Italy, RECs also represent a response to the decentralisation paths facilitated or even triggered by a federal governing structure (Germany) or a quasi-federal structure (Italy) [33]. In both countries, the multi-level dimension plays a role in the choice of policies.

3. Materials and Methods

The present article compares the transposition of the recast Renewable Energy Directive (RED II) in Germany and Italy with an exclusive focus on the provisions for RECs and the respective enabling frameworks that Member States shall provide to promote and facilitate their development. Our analytical framework follows the provisions of RED II and covers the following conditions that should be fulfilled for a complete implementation: context, elements of enabling frameworks, support scheme designs, policy instrumentation as well as policy coordination. We further investigate the characteristics of the transposition, including the coherence of the processes and as well as the estimated effectiveness of the policy mix. In the comparative part of this article, we juxtapose the German and Italian policy strategies with their objectives and the plans for achieving them, along with the instrument mix and interacting policy instruments.

The key methods applied in our analysis combine context analysis and MLG analysis with methods of descriptive (legal) studies and document analysis. Data collection relied on secondary sources, in particular academic journals, technical journals in both countries, reports of European collaborative projects, drafts of laws and regulations, official governmental reports as well as reports and advisory opinions of renewable energy organisations and NGOs, press releases and websites.

Further evidence to support our analysis is derived from stakeholder consultations [60–62], participatory observations and outcomes of the German and Italian stakeholder desks established in the framework of the Horizon 2020 project COME RES. This project focusses on advancing RECs in nine European countries, learning from regions with advanced CE development and supporting target regions which have less experience with the development of energy communities. Country stakeholder desks have been established in all partner countries and serve as informal dialogue fora. They consist of a core group of approximately 30–50 stakeholders including policy makers, public authorities, energy agencies, policy advisory organisations, CE initiatives and cooperatives, associations and other groups of interest, etc. Between December 2020 and April 2022, each of the two countries under investigation organised two desk meetings and two thematic workshops in combination with policy round tables involving European, national and regional policy makers. These events primarily address the status and challenges of transposing the RED II provisions for RECs. Participatory observations and conclusions derived from those events represent an important complement to develop our understanding of how enabling frameworks are presently shaped in practice.

4. The RED II and Its Provisions for Renewable Energy Communities

With its legislative package “Clean Energy for All Europeans”, the EU supports active energy citizens and communities as stakeholders in the European energy market and empowers citizens, granting them ownership of the energy transition. Within the package, particularly relevant are the Internal Electricity Market Directive (2019/944-IEMD) and the revised Renewable Energy Directive (2018/2001-RED II). These directives introduced two types of energy communities: Citizen Energy Communities (CECs) defined under the IEMD and Renewable Energy Communities (RECs) defined under the RED II. Although both types share many commonalities, there are several distinct differences.

The directives provide an extensive list of energy-related activities that CECs and RECs are allowed to conduct. These include generation, consumption, supply, energy sharing, energy storage, aggregation, and management of distribution networks for both RECs and CECs, as well as the provision of energy efficiency, charging, and other energy services for CECs. While regulatory frameworks exist for most of these activities, energy sharing within energy communities and the operation of distribution networks requires particular attention from national and regional authorities when transposing and implementing the directives [13]. The primary objective of CECs and RECs is not financial gain, but to bring environmental, economic, or social community benefits to the members or the local areas in which these entities are active. Key differences between both concepts refer to corporate

governance, membership, effective control, and autonomy. Corresponding provisions are generally more demanding for RECs than for CECs. Member States must provide enabling frameworks to promote and facilitate the development of CECs and RECs. The RED II includes a comprehensive list of key elements that an enabling framework for RECs shall comprise. These include, inter-alia, removal of regulatory and administrative barriers, nondiscriminatory treatment of RECs as market participants, fair and transparent procedures, adequate, fair, and balanced contribution of RECs to the overall cost sharing, access to finance and information, regulatory and capacity-building support for public authorities in enabling, setting up or participating in RECs.

Member States are required to assess the existing barriers and the development potential of RECs. Furthermore, they need to consider the specificities of RECs when designing support schemes for RES so that these can apply for support under the same conditions as other market participants. Recital 26 of the RED II contains several exemplary measures: provision of information, of technical and financial support, reduction of administrative requirements, inclusion of bidding criteria targeted at RECs, tailored bidding windows for RECs, remuneration via direct support if RECs meet the “de minimis” criteria for small installations.

In general, both directives contain several indefinite legal terms, and Member States have considerable room to maneuver in implementing a legal and regulatory framework that is conducive to the development of RECs [63]. This applies in particular to corporate governance criteria such as autonomy and effective control or to criteria referring to proximity.

5. Results

5.1. *The Development of Community Energy in Germany and the Transposition of RED II*

5.1.1. Historical Development, Barriers and Drivers of Community Energy

Germany has a long tradition of energy cooperatives and municipal (multi-) utility companies. In 2016, in Germany existed approximately 1700 CE initiatives with cooperatives representing slightly more than 50% [64]. Electricity distribution cooperatives played a key role in the electrification of rural areas at the beginning of the 20th century, but only a few of them persisted [65]. Modern energy cooperatives experienced a particularly dynamic development between 2006 and 2013. By the end of 2020, the cumulative number of energy co-operatives founded since 2006 reached 896, involving 200,000 members and mobilizing investments in renewable energies of 3.2 billion EURs [66].

The supportive legal and regulatory framework played a fundamental role for the development of CE in Germany. A crucial factor facilitating the emergence of CE were attractive, long-term oriented feed-in tariffs/premiums, which helped create a low-risk investment environment [56]. The price-based support scheme was complemented by a purchase guarantee and priority feed-in of renewable electricity providing a high degree of planning security for investors. Further, this worked as a shelter for small-scale and locally rooted renewable energy producers in particular to grow in a niche market [67]. Amendments to the Cooperative Law in 2006 simplified the rules and requirements to establish energy cooperatives whilst the availability of low interest loans offered by public banks helped to ease the diffusion of energy communities [68,69]. Subnational policies in several federal states have also supported the development of community wind farms through advice, guidance, capacity building, networking and financial support [53]. The German case illustrates that the coordination of national and sectoral policies along different levels of government did effectively support the development of CE [21].

Lately, bottom-up CE initiatives have been increasingly challenged by the changing political framework conditions, particularly by the phase-out of the feed-in-tariff/premium system and the transition to competitive bidding in 2017. Since then, onshore and offshore wind, larger PV, and biomass projects must compete in auctions, where only the cheapest offers are awarded remuneration contracts. The auction design encompasses a “price only”

selection process, i.e., the only award criterion being the necessary support level for the electricity. Only smaller installations benefit from legally fixed remuneration rates.

CE projects cope with multiple structural challenges: higher transaction costs for collective decision making, management and coordination of a large number of members or shareholders, increasingly complex administrative procedures (e.g., planning, permitting, grid connection), lack of expertise and market oversight, lower economies of scale and limited possibilities for project financing. Small project portfolios and a weak capital base prevent the recovery of sunk development costs caused by unsuccessful bids [70].

To preserve a certain diversity of actors and to ensure participation of community wind energy projects in the auctions, the amendments of the Renewable Energy Sources Act (RESA) of 2017 provided special privileges for “citizens’ energy companies” (Bürgerenergiegesellschaften). The low prequalification requirements for citizen energy companies and loopholes in the legal framework led to cases of abuse [71]. Several commercial project developers set up pseudo citizen energy companies formally complying with the eligibility criteria to benefit from the privileges. While some of the privileges have been withdrawn in 2018, others are still in force including a preferential pricing rule [53]. However, the remaining privileges turned out to be ineffective, as demonstrated by the continuously shrinking share of successful bids from citizen energy companies in the frame of wind energy auctions [72]. Overall, the transition from the fixed-price system to competitive tenders has favoured large players and at the same time led to a decline in the number of newly founded energy communities and energy cooperatives [66,73].

5.1.2. Transposition of RED II to Date

Despite its pioneering role, Germany is lagging behind other countries in terms of transposition of the relevant provisions for RECs. The most recent amendments of the RESA of December 2020 and June 2021 failed to fully and timely transpose the provisions for RECs defined in RED II. Although the federal government transposed several requirements referring to individual prosumers, there are still considerable transposition gaps regarding most of the provisions relevant for RECs, but also with regards to collective self-consumption at the building scale.

Many existing energy communities may already implicitly fulfill the criteria of RECs as defined in the RED II. Nonetheless, so far there is no legal definition of RECs in German law that would fully comply with the RED II. The legal term “citizen energy company”, which was already introduced in 2017, shows certain parallels to the definition of RECs in the RED II. However, the purpose of RECs as defined in Art. 2.16 has no explicit equivalent in German law. Furthermore, the definition of “citizens’ energy companies” has a very limited scope of application (wind energy), and there is no equivalent for the other RES. The existing circle of actors that can form a citizen energy company is larger than envisaged for RECs in the RED II. The German law does not define explicitly the rights and activities of RECs mentioned in Art. 22.2 of RED II. Although they are not formally entitled by law, entities that fulfill the criteria of a REC are free to produce, consume, store, and sell renewable energy. However, there is no regulatory framework for energy sharing, enabling REC members to share RES produced by the community.

Neither the federal government nor the Länder governments have carried out any assessment of the existing barriers and potential of development of RECs as required by the RED II that could serve as a well-grounded basis for the creation of an effective enabling framework [74]. So far, the federal government provided only a few elements of an “enabling framework” as defined by the RED II, Art. 22(4). The federal government neither offers any regulatory and capacity-building support to public authorities, nor developed a cost–benefit analysis to ensure an adequate, fair, and balanced contribution of RECs to the overall cost-sharing. Moreover, there are no mechanisms in place to ensure cooperation of relevant Distribution System Operators (DSO) with RECs to facilitate energy transfers within RECs. Access of RECs to start-up financing and information might be improved. There are some innovative measures taken by the Länder, such as the community energy

fund (Bürgerenergiefonds) which has been set up by the state government of Schleswig-Holstein in 2018 and which provides risk capital for CE projects [53]. However, these are standalone measures, and a coherent enabling framework supporting RECs is still lacking.

Although Germany was one of the first countries to consider the specificities of CE in its support scheme for RES based electricity, these turned out ineffective and had partly detrimental effects. Hence, it is essential to provide accompanying support and develop tailor-made solutions. This is precisely where an enabling framework should come in. Another problem aggravating the situation is the increasingly complex and bureaucratic procedures which have deterring effects for CE projects.

After years of stagnation, following the general elections of September 2021 promising signals emerged that gave hope for a U-turn in the piecemeal policy approach of the past years. In its coalition agreement, Germany's new "traffic light" government of Social Democrats, Free Democrats, and the Green Party committed to increase the RES share to 80% of the country's electricity mix by 2030 (from 42% in 2021). The agreement envisaged to strengthen CE as an important element to enhance local acceptance and to improve the frame conditions within the scope of European law. In particular, the coalition committed itself to facilitate energy sharing and to examine the possibility of establishing a fund to cover the risks of CE initiatives. Further, the development of landlord-to-tenant electricity models and neighbourhood concepts is going to be simplified and strengthened. The government also plans to make full use of the "de minimis" rules under the revised Guidelines on State Aid for Climate, Environmental Protection and Energy (2022/C 80/01) and exempt RECs below certain thresholds from the auctions as a contribution to reducing bureaucracy. Parts of those measures have been recently incorporated in the so-called 'Easter Package', a set of legislative proposals released by the Ministry of Economic Affairs and Climate Action in March 2022. These include adjustments to the existing definition of 'citizen energy companies' and the exemption for RECs to participate in auctions. However, a regulatory framework for collective self-consumption and energy sharing is still missing. There are indications that the government first aims to fundamentally overhaul the electricity market design including the complex system of surcharges, fees, taxes and then as a further step deal with the regulatory framework [60].

The creation of an enabling framework pursuant to the RED II needs to consider and integrate subnational levels of government including the federal states, districts, and municipalities. Policies relating to RECs are a multi-governance issue [20]. Therefore, appropriate transposition of RED II requires effective vertical and horizontal coordination. In the past, federal states have been pioneers in promoting the use of RES and CE initiatives [20,75]. Moreover, the German Länder function as important "laboratories for experimentation" [25] (p. 304). Several promising policies and support measures such as the community energy fund established in Schleswig-Holstein or a networking platform for CE initiatives and energy cooperatives set up by the regional energy agency in North Rhine-Westphalia promoting exchange, networking and cooperation and providing initial advice for CE start-up initiatives could serve as crystallization points of a future enabling framework for RECs required by RED II [53].

5.2. *The Development of Community Energy in Italy and the Transposition of RED II*

5.2.1. Historical Development, Barriers and Drivers of Community Energy

In Italy, historical energy communities survived the nationalisation of the electrical system in 1962. They are classified as historical cooperatives and consortia with their own distribution grid. According to the Regulatory Authority for Energy, Networks, and the Environment (ARERA) (Delibera 233/2020/R/eel of 23 June 2020), there are 28 historical cooperatives and one consortium, mainly located in the Alpine area (above all in North-Eastern Italy) (This is not a complete list because some of the entities have yet to be classified.). Due to their location, small and large hydropower and biomass plants represent the most common RES plants to produce electricity. Many of the cooperatives are local distribution system operators (DSOs) and manage district heating networks. Even

though locally limited, some of them supply thousands of customers and own large power plants, exceeding the megawatt threshold.

Until recently, the regulatory framework in Italy imposed significant barriers to the creation of energy communities. RECs differ substantially from the Italian historical cooperatives. For instance, pursuant to Art. 42 bis of Law no. 8/2020 that has partially transposed RED II as regards collective self-consumption and RECs, they could not act as a DSO because their members must be connected to the low voltage grid referring to the same medium-to-low voltage substation, and the single RES installation owned by a REC could not exceed 200 kW nominal capacity. These constraints significantly limited the dimension and relevance of RECs and consequently the interest of stakeholders to invest in such projects. However, the legislation adopted in November 2021 (Legislative Decree no. 199/2021) relaxed those limits. In particular, RECs are limited to the same electricity market zone and the incentives are granted to RECs where the members (producers and consumers) are connected to the same primary electrical substation (i.e., they can be connected to the medium voltage grid) and RES power plants are up to 1 MW. By the beginning of 2021, approximately 20 initiatives complying with RED II provisions have been established pursuant to national law and are operating while more projects are currently under development [76]. Moreover, ten other projects planned before the adoption of the national regulation pursuant to Law Nr. 8/2020 have characteristics which are not compliant with that law, especially regarding the plant size and the connection of the members to the public grid. In those cases, a possible strategy could be to split the original project into small projects and to create an “aggregator” to coordinate the smaller RECs. New RECs are located in many Italian regions from North to South and also on the islands (Sardinia and Sicily). Piedmont is currently the region that counts most RECs (operating and planned). One of the reasons is that it was the first Italian region that adopted a regional law promoting the foundation of RECs in 2018.

So far, the key characteristics of RECs already established or in preparation are affected by the regulation set by Art. 42 bis of Law no. 8/2020:

1. Location: quite widespread, in many Italian regions from North to South;
2. Status: only a few of them are operative, most are in a planning stage;
3. Initiators: mainly municipalities, in some cases SMEs and private companies that are technical partners of the project;
4. Number of members: this is indirectly limited by current legal constraints, in the order of few tens, generally not exceeding one hundred members;
5. Type of RES technology: PV is the far most common choice, due to the limits imposed by the current legislation, the economics of the investment and the favourable incentives for this technology. Only for larger projects other RES technologies are relevant: hydro, biomass, or, less frequently, wind and biogas;
6. Storage: some of the projects foresee the integration of battery storage facilities (so far, in the order of few kilowatt-hours).

5.2.2. Transposition of RED II to Date

As a rule, policy targets for RES are established at the national level. The regional administrations provide specific rules and guidelines for RES projects in their territories such as suitable areas for new plants. Within the National Energy and Climate Plan (NECP), national targets have been set for 2030 referring to RES (i.e., to reach a share of 30% in gross final energy consumption, and of 21.6% in transport), energy efficiency, (reduction of final energy consumption by 43% vs PRIMES scenario 2007) [77] and reduction in GHG emissions (33% reduction compared to 2005) [78]. Even if no quantitative targets have been formulated, the NECP fosters initiatives oriented to make citizens and SMEs the leaders and beneficiaries of the energy transition through the creation of self-consumption initiatives and energy communities.

Prior to 2020, there was no organic regulatory framework for collective self-consumption and CE actions. In order to close this gap, the Italian government anticipated the adoption of

RED II, by pro-actively inserting a specific article, i.e., Article 42bis, in the Omnibus Decree Law 162/19 (so called “Milleproroghe” Decree) subsequently modified in Law no. 8/2020 regulating the establishment of energy communities.

Thanks to the progress made in the transposition of RED II, electricity consumers can join collective self-consumption initiatives and energy communities. According to Art.42bis, eligible RES plants of RECs and collective self-consumers are required to start operation after 1st March 2020, but their size is limited to 200 kW. The “Rilancio” (Re-launch) Decree, 9 May 2020 n. 34, offers up to 110% tax deductions of personal income (Superbonus) for energy efficiency measures and new PV installations up to 20 kWp. These also apply for RECs and collective self-consumers. The Energy Authority (ARERA) Resolution of 4 August 2020, 318/2020/R/eel established criteria for regulating specific economic items (i.e., energy costs, energy prices, taxes and duties) related to self-consumption or energy sharing within RECs. On 16 September 2020, the Ministry for Economic Development (MiSE) issued a decree that provides financial incentives for collective self-consumption and energy communities.

However, considering the provisions of RED II, a number of issues still need to be improved. These concern instruments to facilitate the access to finance; regulatory and capacity-building support to public authorities in enabling and setting up RECs and rules to secure the equal and nondiscriminatory treatment of consumers.

Until the full transposition of RED II there were only limited opportunities for REC projects to contribute to achieving the NECP goals. This was partially due to the national regulations which limited the capacity of RES installations to 200 kW, and which required that consumers and prosumers are connected to the low voltage grid (see above). This limitation has been recently overcome by Legislative Decree no. 199 of 8 November 2021 which largely transposes RED II, increases the capacity limit of REC plants to 1 MW and allows members and plants of a REC to be connected to the medium voltage grid. Under the Italian Recovery and Resilience Plan (PNRR), which aims to overcome the economic consequences of the COVID-19 pandemic, a fund of 2.2 billion Euro has been set up to provide financial resources for the establishment of RECs in small towns with fewer than 5000 inhabitants. This represents a congenial support to finance public–private REC initiatives.

In anticipation of national regulations, the region of Piedmont adopted the Regional Law no. 12 of 3 August 2018 on regional energy communities. This led to the development of several CE initiatives in the region which can be considered pioneers in terms of promoting RECs.

After the establishment of Art. 42bis, other regions created own regulatory frameworks for energy communities by considering the specific local conditions. The Regional Council of Apulia enacted the Resolution no. 1346 of 7 August 2020 which provides specific guidelines and an enabling framework to the already existent Regional Law no. 45 of 9 August 2019 “Promotion of the institution of the energy communities”. According to those regional laws, qualifying as an energy community requires the achievement of a minimum annual share of self-consumed energy (70% for Piedmont and 60% for Apulia).

Following the examples of Piedmont and Apulia, also the region Liguria has approved a law for the promotion of energy communities. The Regional Law n. 13 of 6 July 2020 aims at promoting self-consumption and distributed generation through the creation of groups of public and private entities to produce, consume and store energy. Moreover, the region Calabria has a law (Regional law no. 25 of 10 November 2020) that promotes the establishment of RECs for the production, exchange, storage and sale of renewable energy as well as self-consumption. Furthermore, it supports energy efficiency initiatives contributing to reduce energy poverty and illegal power withdrawals. With Regional Law no. 2 of 23 February 2022, Lombardia has set a favourable framework for the development of RECs, with an initial allocation of 21.5 million Euros between 2022 and 2024. Other regions, e.g., Veneto, Sardinia, Emilia Romagna are currently implementing regional legal frameworks to promote energy communities.

6. Discussion

6.1. Comparing the Context: Technology Assets, Type of Initiators and Legal Forms

In this section, we compare the status quo in the two countries according to a set of criteria including the number of initiatives, technology assets, type of initiators and legal forms.

In Germany, energy cooperatives represent the most common form of energy communities in the field of PV. In general, energy cooperatives tend to be small and local, with only a few cases with several thousand members, typically engaged in electricity supply. These local energy initiatives provide fruitful ground for the development of community storage and integrated community-based concepts such as cross-sector coupling, e.g., power-to-heat, virtual power plants, or microgrids [79]. Such approaches are in a nascent stage of development. In contrast to other European countries such as the Netherlands, the cooperative model is less common for wind farm operations. Community wind farms mostly use the legal form of a limited partnership with a limited liability company as general partner. CE projects are widespread, and the German CE landscape is fairly heterogeneous in terms of initiators, supporting structures, geographical scale, size, technologies, involvement of local authorities, legal forms and financing [23].

In Italy, energy communities are emerging in almost all regions, but so far just a few of them are operating in accordance with the national framework pursuant to Art. 42bis. The regions with a higher number of projects are Piedmont, Sardinia, and Apulia, also thanks to regional laws that have supported their realization. Historical energy communities are located in Northern Italy (Lombardy, Trentino Alto Adige). In the following, the main indicators are summarised, based on the literature [76] and market surveys.

With regard to technology, PV dominates in new energy communities, while historical cooperatives use a mix of technologies including PV, hydro, and biomass power plants. Energy communities operating wind turbines have not been found so far, probably because the plant sizes are generally above the initial capacity limits of the national legislation (200 kW) and the Operation and Management (O&M) costs are generally higher than PV plants. Storage facilities have been installed only in few communities so far but are becoming more popular thanks to the current fiscal deductions and incentive. Typical capacities are in the order of a few tens of kWh, generally less than 30 kWh. One factor facilitating the emergence of RECs is the fact that Italy is one of the frontrunners regarding the introduction of smart meters [15].

New energy communities pursuant to Art. 42bis are generally composed of a limited number of members, typically around twenty, with few exceptions approaching 100 members. By contrast, historical energy cooperatives count several thousand members.

As depicted in Figure 1, new REC projects are initiated mostly by municipalities and private companies (above all SMEs), less frequently by public companies (e.g., social housing companies) and associations. There are a few examples of RECs directly promoted by research centres, while less common is the case where citizens are the first initiators.

Regarding the legal form, most of the RECs pursuant to Art. 42bis have been established as nonprofit organizations or associations, reflecting the small size of the community. Finally, the revenues gained by the electricity sold to the grid and the incentives for energy sharing among members are primarily used to pay back the initial investment and then distributed among members. Profits are used mainly to reduce electricity bills of the members, to install new RES installations, social solidarity measures aimed specially to mitigate energy poverty, and for local initiatives. Tables 1 and 2 provide an overview of the most common legal forms in both countries.

6.2. Comparing RED II Transposition and Development of Enabling Frameworks

In this section we compare the transposition of key provisions of RED II concerning RECs and the key elements of an enabling framework. The comparative assessment helps to answer whether the provisions are suitably transposed into national law. We summarize

the characteristics of the enabling frameworks that the governments of both countries are providing to promote and facilitate the development of RECs under RED II.

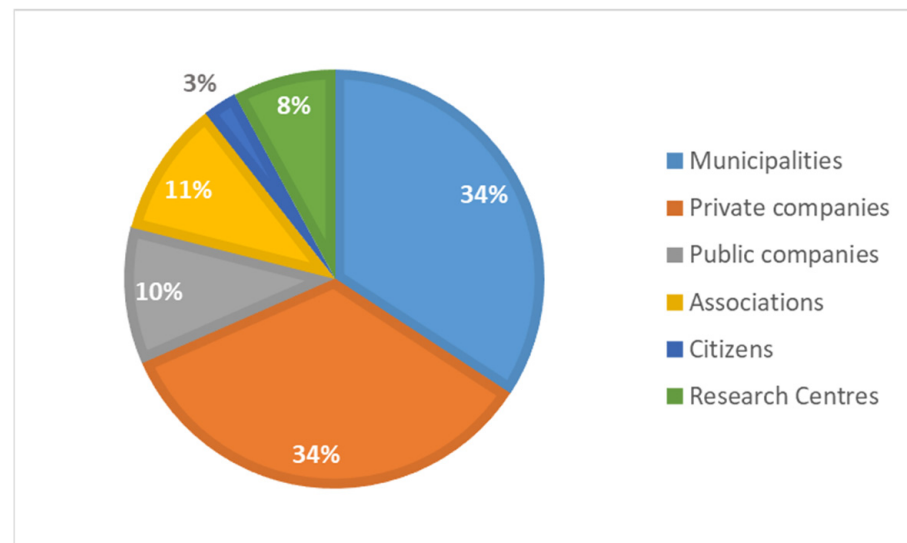


Figure 1. Initiators of renewable energy communities in Italy. Source: Authors' elaboration based on data from [76].

Table 1. Legal forms of renewable energy communities in Germany.

	Community PV (Ground Mounted)	Community PV (Rooftop)	Community Wind	Community Storage	Integrated Concepts
Cooperatives	+	+++	+	+	+
Limited partnerships or limited companies or hybrid forms	+++	+	+++	+	++
Civil law partnership	+	+	+	–	–
Other legal forms	+	+	+	+	+

+++ large experience; ++ medium experience; + selective experience, – no experience.

Table 2. Legal forms of renewable energy communities in Italy.

	Community PV (Ground Mounted)	Community PV (Rooftop)	Community Wind	Community Storage	Integrated Concepts
Cooperatives	–	+	–	–	+
Limited partnerships or limited companies or hybrid forms	+	+	–	–	++
Civil law partnership	+	++	–	+	++
Other legal forms	–	+	–	–	+

++ medium experience; + selective experience, – no experience.

A preliminary comparative assessment of the transposition process in the countries represented in the COME RES project which was published in April 2021, suggested that Italy, Belgium (Flanders) and Portugal are among the frontrunners in terms of transposing the legal provisions for RECs, whereas Latvia, Poland and Germany made comparatively little progress [54]. This finding has been supported by other comparative cross-country assessments [4,80]. Referring to Germany and Italy, our analysis shows that at the point of writing the paper (March 2022), the situation has not much changed (Table 3). So far, the federal government in Germany has been reluctant to facilitate collective self-consumption and energy sharing as required by the RED II. The findings of the stakeholder dialogues and policy round tables performed in the frame of the German COME RES country desk

suggest that a key concern is if too many people would switch to self-consumption, the system costs (e.g., grid charges) would disproportionately increase the financial burden for the remaining consumers [60].

Table 3. Key elements of the enabling frameworks for RECs (as of 31 March 2022).

Elements	Germany	Italy
Legal definition of RECs fully in compliance with RED II	No	Yes
Final customers, in particular household customers, entitled to participate in a REC	In principle, yes, but so far RECs have been insufficiently legally codified	Yes, further provisions are expected in future decrees.
RECs legally entitled to produce, consume, store and sell renewable energy and share, within the REC, renewable energy that is produced by the REC	Theoretically, but there is no regulatory framework for energy sharing	Yes
Assessment of barriers and drivers of RECs carried out by national or any regional government	No	Partly
Removal of unjustified regulatory and administrative barriers to RECs	Partly	Partly, further provisions are expected in future decrees.
Cooperation of relevant DSO with RECs to facilitate energy transfers within RECs	No specific provisions	Provisions are expected in future decrees.
Fair, proportionate and transparent procedures; cost-reflective network charges; relevant charges, levies and taxes to contribute in an adequate, fair and balanced way, to the overall cost sharing of the system (in line with a transparent cost-benefit analysis developed by the national competent authorities)	Partly, no cost benefit analysis existing	Partly
Nondiscriminatory treatment of RECs with regard to activities, rights and obligations as final customers, producers, suppliers, DSOs, or as other market participants	Mostly	Yes, in principle, detailed provisions are expected in future decrees.
Accessibility of RECs to all consumers, including those in low-income or vulnerable households	In principle yes, but no specific provisions or incentives; conflicts with social welfare legislation	Yes
Availability of tools to facilitate access to finance and information	Access to finance available (e.g., low interest loans provided by the publicly owned development bank KfW); access to information available but should be improved; need of risk capital/start up finance.	Partly (at regional level)
Regulatory and capacity-building support provided to public authorities in enabling and setting up RECs, and in helping authorities to participate directly	Only few federal states (e.g., North Rhine Westphalia).	Partly
Rules to secure equal and non-discriminatory treatment of consumers that participate in the REC in place	No specific provisions	No specific provisions
Consideration of RECs in support scheme designs	Partly (see below)	Yes

6.3. Comparing Support Schemes for Renewable Energy and Their Consideration of RECs

In this section, we compare to what extent the specificities of RECs are taken into consideration when governments design support schemes for RES. We take a broader view and also look at dedicated support measures specifically targeting RECs. Overall, various financing sources for CE initiatives are available.

Although the German federal government introduced special privileges for community wind projects under the auction regime, current legislation failed to achieve its intended effect. The example of Germany suggests that auctions need to be carefully designed, implemented and evaluated in order to yield the intended results and avoid unintended effects. In particular, the provision of risk capital, start-up financing and other risk mitigation strategies for RECs would be crucial. As mentioned above, individual federal states took measures to overcome this barrier, but the impact remained regionally limited. However, the new federal government recently decided to exempt RECs below certain capacity thresholds from the auctions.

In Italy, the type of the initiating actor(s) reflects the financing mechanisms to purchase and install the RES power plants. Municipalities generally rely on public funds and nonrefundable grants, while companies rely on equity, foundation funds or funds gained from national or European research projects. The latter type of financing is mostly used by research centres, which often benefit from EU research funding in cooperation with SMEs. Social housing and private citizens rely on tax deductions, and there are a few cases where crowdfunding has been used to finance RECs.

The already cited Decreto Rilancio (see Section 5.2.2) introduced the “Superbonus”, new tax credits for improvements to Italian properties, recently extended to 31 December 2023. It qualifies seismic renovations, energy efficiency improvements and rooftop PV installations attracting a tax credit amounting to 110% of the qualifying expenses ensuring tax compliance in the local building industry. Tables 4 and 5 summarize the key findings of our comparative research.

Table 4. General support schemes for RES and their consideration of RECs in comparison.

Elements	Germany	Italy
Quantitative policy targets for RES in general	Yes, both on federal and state level. The coalition agreement of the new federal government sets a target of 80% RES-based electricity and 50% RES based heating for 2030.	Yes, National Integrated Energy-Climate Plan (PNIEC): 30% RES coverage of final gross energy consumption for 2030
Key support schemes for RES based electricity	Market premium based on auctions for PV and wind energy plants >750 kW, biomass/biogas plants >150 kW; feed in premiums for small scale PV; low-interest loans and investment grants provided by public banks (e.g., KfW, Landwirtschaftliche Rentenbank)	Auctions for big RES plants (exceeding 1 MW), direct incentives (subscription to registers) for RES plants below 1 MW, investment grants, fiscal incentives, favourable VAT regime, tax credits for PV installation costs, net metering scheme.
Consideration of RECs in key support schemes for RES based electricity	Reduced security deposits and uniform pricing rule for citizens' energy companies under the auctions in the field of wind energy	Investment grants, incentive of 110 €/MWh feed-in premium for shared energy in RECs, reimbursement of part of network charges in the bill, tax deductions (for residential members)

Table 5. Comparing dedicated support schemes for RECs.

Elements	Germany	Italy
Policy targets		
Quantitative policy targets for RECs	No	Yes, the Recovery Plan (PNRR) envisages 2 GW of RES capacity to be installed by RECs by 2026 in municipalities below 5000 inhabitants.
Qualitative policy targets for RECs	No explicit target, but pursuant to §2 of the RESA the “diversity of actors in electricity generation from RES should be preserved”. Few federal states formulated qualitative targets in their energy strategies.	RECs are included in the National Integrated Energy and Climate Plan among the initiatives that contribute to the 30% RES coverage target on the final gross energy consumption for 2030.
Regulatory measures		
Privileges for RECs in the context of spatial planning	No	No
Privileges for RECs in project approval/permitting	No	No
(Virtual) net metering	No	Yes
Economic and fiscal incentives		
Specific investment grants	Partly (federal states)	Yes, in some regions (e.g., Lombardia)
Funds providing start up finance	In 2018, the state government of Schleswig-Holstein has established a revolving fund providing risk capital for CE initiatives in the start-up phase. The government of Thuringia plans to follow this example. The new federal government plans to set up a similar fund at national level.	Regional funds
Low-interest loans specifically for community energy initiatives/RECs (e.g., lower interest rates, longer repayment periods or extended grace periods)	Low interest loans and grants provided by Landwirtschaftliche Rentenbank	Yes, PNRR provides 2.2 billion Euro to support development of RES installations by RECs established in municipalities below 5000 inhabitants (via zero interest loans).
Fiscal incentives	No specific provisions	Yes, 50% or 110% personal income tax deductions for the installations of PV plants for residential customers.
Financial support for energy sharing	No	Yes, 110 €/MWh feed-in premium for shared energy in RECs

Table 5. Cont.

Elements	Germany	Italy
Technical assistance, capacity development		
Information, advice	Few federal states	Advice, guidance, capacity building through key national institutions (e.g., GSE, ENEA, RSE *)
Technical assistance	Few federal states	
Promotion of networks	Few federal states	Few regions
Institutional support, competence/coordination centers, one stop shops, etc.	Few federal states (e.g., through energy agencies and other intermediaries)	Yes, coordination centres in some regions
Dedicated training for local authorities and/or RECs	Few federal states	Yes
Dissemination of good practices	Few federal states	Yes
R&D, experimentation, regulatory sandboxes, living labs etc.	Federal government and few federal states	Yes

* Gestore dei Servizi Energetici (GSE), Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), Ricerca sul Sistema Energetico (RSE).

6.4. Comparing Policy Instruments and Vertical Policy Coordination

This section analyses parallels and differences regarding policy instrumentation and the extent to which policies and measures taken at the national level and at the regional/local level reinforce (or inhibit) each other. The set-up of enabling frameworks for RECs represents a multi-level governance task involving different levels of government including the municipalities. Hence, the promotion of RECs encounters various policy interlinkages with partly overlapping competences which need a considerable level of coordination, in particular vertical coordination efforts involving different governance levels. Market rules, definition of overall rights and duties of RECs, their roles and integration in the overall energy market and RES support scheme design are usually tasks carried out by the national government. Spatial planning and permitting are typical tasks performed by subnational entities, partly based on national/federal, partly on regional/state legislation. The same applies to ‘soft’ accompanying policy measures including the provision of information, advice, capacity development, networking, etc. Often, regional/state governments design complementary financial support measures to facilitate the development of RECs. R&D activities, including experimental regulations and regulatory sandboxes, are typically supported by national and subnational policy actors. Municipalities enjoy some degree of autonomy, including certain financial autonomy and partly legal authority in planning and approving RES facilities. There are various options for municipalities to support the development of RECs [20]. They may act as initiators of or shareholders in a REC and may purchase the energy produced by RECs. In their role as owners of land and property, municipalities may provide suitable sites for RES facilities operated by RECs. They may financially support RECs in the form of equity or by granting loans, or they can assist by providing information, start-up financing, by building trust and provide legitimacy to RECs. Table 6 provides a comparative assessment of the different responsibilities for designing and implementing an enabling framework for RECs.

Although one of the aims of the RESA under the auction scheme has been to preserve the diversity of actors in electricity generation from RES, the previous governments in Germany failed to operationalize and underpin this objective with a coherent and effective set of promotional measures. As described above, the new auction system tilted the playing field to the disadvantage of CE, particularly in the field of wind energy. With the amendments to the Climate Change Act, the Merkel government enshrined the goal of

achieving GHG neutrality by 2045. This and the full transposition of the RED II provisions for RECs require considerable efforts and intensified collaboration between the federal government and subnational levels of government. Although the new federal government recently decided to exempt RECs below a certain capacity threshold from the auctions, there is definitively a need to remove the manifold administrative barriers in the field of planning and authorization. In any case, it is of utmost importance to amend the existing legal definition of citizens' energy companies in order to re-align it with the requirements of the RED II and at the same to ensure avoidance of misuse. Furthermore, energy sharing and collective self-consumption within buildings need to be facilitated. This should be combined with accompanying measures enhancing experimentation, capacity building and institutional support through intermediaries such as regional and local energy agencies [21]. Here the federal states, regions and municipalities have a fundamental role to play. Austria provides a useful model case where the federal government has established an official coordinating body offering administrative support and guiding the establishment of energy communities on a national as well as on a federal province level [5].

Table 6. Elements of the enabling frameworks for RECs and respective responsibilities.

Elements	Germany	Italy
Assessment of barriers and drivers for RECs	Federal government, state governments	National government
Foundation/setup of RECs		
Nondiscriminatory participation of households	Federal government	National government
Nondiscriminatory participation of low-income/vulnerable households	Federal government	National government
Defining rights and duties of RECs	Federal government	National government
Market activities of RECs		
Access to financing, provision of start-up financing, risk capital, low interest loans etc.	Federal government, state governments, public funds (e.g., community energy funds)	National government, regional governments, private foundations
Other economic incentives (fiscal incentives etc.)	Federal government, state governments	National government
Spatial planning/siting of RES facilities	Federal government, state governments, regional planning bodies, municipalities	National government, regional government, municipalities
Approval/authorization of RES facilities	Federal government, state governments, districts, municipalities	National government, Regional government, municipalities
Information provision, advise	State governments, districts, municipalities	National government, Regional government, municipalities
Institutional support, REC competence/coordination centers, one stop shops, networking	Federal government, state governments, districts, municipalities	National government, Regional government, municipalities
Technical assistance, capacity development for local authorities and RECs	Federal government, state governments, districts, municipalities	National government, Regional government, municipalities
R&D, experimentation, regulatory sandboxes, living labs, etc.	Federal government, state governments, districts, municipalities	National government, Regional government, municipalities

Table 6. *Cont.*

Elements	Germany	Italy
Consideration of RECs in support schemes for RES (investment support, operational support)	Federal government, state governments	National government Regional governments
Dedicated support schemes for RECs	Federal government, state governments	National government Regional governments

In the past, there has been strong criticism from both science [25] and practice [81] lamenting the insufficient vertical coordination between the federal and the state level in the area of the German energy transition. With its latest amendments to the RESA in 2021, already the previous federal government responded to this criticism and took promising measures to institutionalise cooperation between the federal and state governments by establishing a new cooperation committee (Bund-Länder-Kooperationsausschuss). In its coalition agreement, the new federal government committed itself to further strengthen this cooperation between the federal government, the states and municipalities to achieve the accelerated expansion of RES [82]. This committee has currently a focus on re-aligning federal and state expansion targets for RES and on the removal of administrative barriers in the field of spatial planning and project authorisation, which can be regarded as an important step towards the creation of a more effective enabling framework for RECs. It is unclear yet to what extent the competences of this committee might be expanded in the future to address other important elements of an enabling framework including market design reform, financial support or capacity development.

Whereas, in Germany, political support for CE initiatives on the federal level has decreased in recent years, Italy has enacted a set of promising and mutually reinforcing policy measures and incentives. The recent Legislative Decree nr. 199/2021 provides a direct incentive for newly installed RES plants up to 1 MWp owned by RECs and collective self-consumers, who are exempted from auctions. In general, auctions are required only for RES plants exceeding 1 MWp. Pursuant to this decree, the extension of the maximum size of a RES plant from 200 kWp to 1 MWp to access the incentive for shared energy in RECs, and the possibility of consumers and prosumers to stay connected to the low and medium voltage grid and to the same HV/MV primary substation has considerably increased the potential participation perimeter of RECs and the number and type of customers that can join energy communities. Moreover, the decree has simplified authorisation procedures for the installation of PV plants up to 50 kWp and also for larger plants. So far, dispositions of Legislative Decree no. 199/2021 still require a set of implementing Ministerial Decrees and Resolutions of the National Energy Authority expected in the next months. Only after their promulgation issue will the legislative framework be definitive and clear. Nevertheless, based on provisions of Legislative Decree no. 199, in Italy, RECs are expected to increase both in number and size in the coming years.

7. Conclusions

7.1. Lessons Learned

Creating enabling frameworks in line with the EU intentions calls for systematic, comprehensive and coherent policy approaches which need to address both the setup of RECs and their integration in the energy market. Hence, the creation of enabling frameworks has to embrace a broad spectrum of issues, such as inclusiveness of RECs and new market activities, planning and authorisation procedures, support schemes, overall market design and integration. These developments are unfolding both in Germany and in Italy against the background of a policy framework still characterised by path dependencies and a heavy reliance on fossil fuels—a fact that became particularly clear in the aftermath of the invasion of the Ukraine—and a still high influence of market incumbents. Although CE development is generally more advanced in Germany, transposition of the RED II

provisions is slow and incomplete. The stakeholder dialogue conducted in Germany in the framework of the project COME RES pointed out several implementation deficits, some of which are of structural nature (e.g., the role of the DSOs) or are historically determined (a pre-existing definition of community energy before the RED II inception) or are of political nature (e.g., distributional fairness considerations, new market design for electricity). In Italy, by converse, the findings of the stakeholder dialogue confirmed that lacking regulations and a previous definition for community energy helped the RED II to play a catalyst role for the planning and implementation of CE initiatives. In our comparison of the two countries, we found many similarities but also striking differences. Important parallels are listed as follows:

- Both countries have deep roots and traditions of energy cooperatives which played a key role in the rural electrification in the beginning of the 20th century.
- Both countries have a federal or quasi-federal political system which requires intensive vertical and horizontal policy coordination efforts.
- Regions/municipalities enjoy political and a certain financial autonomy. These actors have partly taken up a pioneer role regarding the promotion of RECs.
- The development of CE initiatives in both countries has been facilitated by supportive policies based on a wide range of incentives and a remarkable reduction in technology costs. However, the discontinuation of price-based support schemes led to a slump in new RES installed capacity and investments [83].

On the other hand, several differences were noticeable, particularly in the following areas:

- The sectoral focus of RECs and corresponding political support in Italy is mainly on PV. RECs are primarily organised around the legal form of nonrecognised associations. In Germany, by contrast, cooperatives dominate in the PV sector, whereas hybrids of limited companies and partnerships are the preferred form for community wind farms.
- Germany experienced a highly dynamic development of modern CE initiatives including energy cooperatives, particularly between 2006 and 2013 due to a supportive legal and policy framework. However, due to the instrumental shift characterised by auctions for large PV, wind and biogas and the phase-out of feed-in tariffs/premiums for the development of CE lost momentum. On top of that, there have been policy design failures that led to misuse by commercial developers and ended up discrediting the concept of CE. RECs have been increasingly “kept in quarantine” [84].
- Whilst in Italy the combination of pro-active regional governments with strong political commitment and a partly pro-active national government led to the design of support schemes that created a wide interest in developing RECs, in Germany there has been hardly a strategic and coherent planning approach towards RECs in the recent years, and the levels of “transformative vision” and “directionality” [21] have been poor. The governments under Angela Merkel showed low political commitment to advance CE, and policy development was guided by a market-based rationale rather than by the energy related and socio-economic benefits of CE. In Italy instead, elements of an effective enabling framework have started to take shape two years ago, before the full transposition of RED II.
- RED II has delivered new stimuli to the development of RECs, but the transposition dynamics and their effects are different in the two countries analysed. Although the previous federal government in Germany took measures to consider the specificities of community wind energy initiatives in support scheme design, these measures were not effective in compensating for the structural disadvantages RECs are facing in auctions. Moreover, the past government has been reluctant to facilitate collective self-consumption and energy sharing as required by the RED II. On the other side, there have been several promising and innovative initiatives from the subnational level. The RED II transposition has been distinctly more dynamic than in Germany where the negligent transposition hindered a new lease of life for REC development.

However, there are clear indications that the creation of an enabling framework is gaining momentum under the new federal government.

From our two-country comparison, we can distill a number of lessons for policy. The implementation of enabling frameworks is advancing in both countries, albeit with different pace and political support. However, in both countries, administrative bottlenecks in planning and authorization processes remain serious barriers for the mainstreaming of CE in general and RECs in particular. Therefore, both countries need to enhance coordination between national and regional governments. Moreover, in this early stage of the RED II transposition at the national level, it is not possible to detect multi-level dynamics that reinforced each other over time and resulted in more ambitious policy outcomes. In Italy, there has been a certain activism of regional and local governments that has encouraged positive practices in terms of local energy strategies for enhancing renewables, including RECs. However, so far, the existing interdependencies between policy making at regional and national levels and the lack in coordination mechanisms have failed to give life to a 'multi-level reinforcement' that helped in compensating for the lack of efforts at a certain level of governance. Overall, a widespread uptake of RECs requires structural adjustments of the governance system of both countries. A more coherent and strategic approach is required, particularly in Germany. In Italy, existing mechanisms for vertical coordination have proved to be barely effective. Moreover, because of the persistence of different incentives at different levels and the formal and informal mechanisms for vertical intergovernmental coordination, there is still an urgent need for coherence and effectiveness for those policies that involve several actors at different territorial scales [33]. Therefore, political engagement remains crucial. Whereas in Italy political commitment found new momentum with the National Recovery and Resilience Plan which may represent a major driver for the enhancement of RECs, in Germany there are indications that the new federal government aims to improve vertical policy coordination and to streamline and accelerate planning and approval procedures in cooperation with the Länder. It is too early to assess whether and to what extent coordination efforts will be enhanced. It would be commendable to broaden the focus of this committee to address other important elements of an enabling framework for RECs, such as re-shaping market design to enable energy sharing and collective self-consumption, financial support or capacity development.

7.2. Implications and Fields for Further Research

This article has tried to contribute to the understanding of complex regulatory and legal challenges influencing the mainstreaming of community energy in two similar, but—as we have seen—to some extent also different countries. Innovative bottom-up approaches involving local actors in both countries helped to foster a positive link between acceptance of (renewable) energy projects and decentralised local activities, yet more than the social and acceptance barriers, it is rather the still existing regulatory challenges that risk to curb the process and the development of RECs. In both countries, structural adjustments to the governance system are taking place, but a number of structures and regulations are still being defined. Therefore, it is not clear yet what governance architecture is to be pursued and which will ultimately emerge in order to accommodate the changes brought about by RECs. Further research is needed on the effectiveness of different policy instruments that governments employ to support RECs [19] and on how interactive dynamics in systems of multi-level governance can trigger positive policy feedbacks that increase support for the policy and its effectiveness. Multi-level reinforcing dynamics enable us to explain a policy change on the basis of interdependencies between policymaking on the European, and regional levels. Moreover, 'multi-level reinforcement' can compensate for the lack of resources at a certain level of governance as interested political actors can anchor their policy preferences and ambitions at another level [33,85]. It would be interesting to detect and monitor both those reinforcing dynamics that have contributed to foster the German and Italian energy transition and those negative policy feedbacks hindering the process [33]. Finally, an interesting research avenue could involve the analysis of the

consistency, coherence and synchronisation of policy development when designing the enabling frameworks for RECs.

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