

Do energy communities need to be local? A comparative study of two energy cooperatives in Europe

Aurore Dudka · Natalia Magnani

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Abstract Energy communities are integral to achieving the European goal of carbon neutrality by 2050. While these communities are currently being emphasized as strictly place-based, with some states interpreting RED II's proximity criterion stringently, our research offers a contrasting perspective: We argue that a sole focus on geographical proximity fails to capture the full contributions of energy community projects, especially those that function as communities of interest rather than merely as communities of place. In order to support this perspective, our study analyses data from 5402 responses and 31 semi-structured interviews from two main energy cooperatives: Ecopower in Flanders, Belgium, and enostra in Italy, in both of which, members are not confined by geographical boundaries and are instead united by shared energy-related interests.

Our findings indicate that these two organizations are pivotal to driving the European energy transition. The organizations effectively rally their members around a common identity, thereby fostering new norms, practices, and forms of social capital as well as offering a shield against the market's prevailing logic. This observation becomes even clearer when considering the fact that the cooperatives have reached a significant level of business maturity, with Ecopower utilizing more resources for including and empowering participants and territories. Our research underscores the importance of re-evaluating the role of geographical proximity in energy policies and highlights the potential that interest-based cooperatives have when it comes to advancing sustainable energy initiatives across various geographical scales.

Proofreading Our work has been proofread by a native English speaker.

✉ Aurore Dudka · Natalia Magnani
University of Trento, Trento, Italy
E-Mail: Aurore.dudka@unitn.it

Natalia Magnani
E-Mail: Natalia.magnani@unitn.it

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Müssen Energiegemeinschaften lokal sein? Eine vergleichende Studie zweier Energiegemeinschaften in Europa

Zusammenfassung Erneuerbare Energiegemeinschaften (Renewable energy communities, REC) werden als eine Möglichkeit gesehen, das ambitionierte europäische Ziel der Klimaneutralität im Jahr 2050 zu erreichen. Insbesondere mit der Umsetzung der RED II-Direktive ist ein starker Schwerpunkt auf geographische Nähe gelegt worden, ein Kriterium, das in einigen Staaten sehr strenge Anwendung gefunden hat. Wir argumentieren dagegen, dass dieser Ansatz nicht hinreichend die positiven Effekte solcher Projekten in Betracht zieht, die stark auf Bürgerbesitz und einer Bottom-up-Logik basieren, und stattdessen auf einem größeren Maßstab operiert. Auf der Grundlage von 5402 Fragen und 31 teilstandardisierten Interviews diskutieren wir die Bedeutung zweier wichtiger, auf Interessen- statt auf Ortsgemeinschaften gegründeter Energiegemeinschaften in der Europäischen Union: die Genossenschaften Ecopower in Flandern und *è nostra* in Italien. Wir zeigen, dass diese Organisationen eine wesentliche Rolle in der Energiewende spielen, indem sie ihre Mitglieder durch eine gemeinsame Identität zusammenbringen, neue Normen und Handlungsweisen schaffen und vor der Logik des Marktes schützen. Dieser Befund wird noch verstärkt, wenn die Genossenschaften wie im Fall von Ecopower einen gewissen Grad der Unternehmensreife erlangen und damit über mehr Ressourcen verfügen, um Teilnehmer und Territorien einzubeziehen und zu stärken. Wir ziehen den Schluss, dass es sich bei Energiegemeinschaft um einen „Grenzbe-griff“ handelt, der nicht auf ortsbasierte Initiativen beschränkt werden sollte.

Schlüsselwörter Energiegenossenschaften · Energiegemeinschaften · Nähe · Ortsgemeinschaften · Interessengemeinschaften

1 Introduction

European legislation has fostered the formation of renewable energy communities (RECs) through Renewable Energy Directive II (RED II), thereby highlighting the European Union’s willingness to develop projects led by actors located in close proximity to their own renewable energy installations (European Union 2018). This new perspective has also been identified in the academic literature, in which energy communities are now increasingly being regarded as local entities that focus on the importance of face-to-face interactions among community members within a given area (Bauwens et al. 2022; Birch and Whittam 2008).

This emphasis on geographical proximity within energy communities underscores the increasing recognition of the role of localism and decentralization in driving the energy transition (Dubois and Kebir 2021; Vernay et al. 2023) as well as the importance of fostering direct citizen engagement (Walker and Devine-Wright 2008;

Nicolosi and Feola 2016; Busch and McCormick 2014). Communities of place are considered a means of fostering social ties, norms, trust, and a shared sense of purpose among inhabitants, thereby driving the energy transition at the grassroots level by empowering citizens and facilitating the diffusion of renewable energy technologies (Ostrom 2009, 2010). Moreover, projects at this scale have the advantage of promoting a fair distribution of local benefits within the territory in which the installations exist. Therefore, by focusing on local community-based initiatives, energy projects can have both more significant and more positive impacts on the local economy, thereby fostering sustainability and self-reliance within the community (Coy et al. 2022; Velasco-Herrejon and Bauwens 2020). These projects additionally create opportunities for stimulating local economic growth, generating employment, and developing local resources and skills (Haggett and Aitken 2015).

However, some researchers have been critical of this perspective and instead advocate for a hybrid approach that goes beyond solely focusing on the location-based concept of an energy community (Walker et al. 2022). While framing energy communities as communities of place may have certain limitations (Wyse Morrissey and Hoicka 2019), communities of interest—in which individuals with shared interests in energy-related goals come together, regardless of their physical location—can play a crucial role in bridging the gap between local interests and broader concerns (Heiskanen et al. 2010; Moroni et al. 2019). This perspective has been increasingly acknowledged, with some scholars advocating for a greater focus on communities of interest within the domain of energy communities. Such communities can effectively pool resources, expertise, and investments in addition to promoting knowledge-sharing and capacity-building, which might be lacking in communities of place (Hargreaves et al. 2013; Kivimaa et al. 2019; Van Der 2008).

Nevertheless, there is a valid concern associated with this approach of promoting the concept of a community of interest in its exclusive form. A key issue is the potential for exploitation by external market-driven actors, who may lack a deep connection or embeddedness in the local context. This situation is particularly relevant in the context of the Internal Electricity Market Directive (IEMD), in which private entities are allowed to participate in citizen energy community (CEC) projects, thereby potentially challenging the core logic of energy community models (Bomberg and McEwen 2012). Such external actors have the potential to exacerbate existing inequalities rather than fostering a more equitable energy transition across society (Brisbois and de Loë 2017). Existing studies have shown that certain regions become targets for external actors who prioritize their own interests, thereby neglecting the distribution of benefits to the local population and failing to enhance the capabilities that the communities have (Magnani and Carrosio 2021). Consequently, this situation leads to the emergence of new inequalities and social opposition to projects, which undermines the potential positive social impacts of energy transition (Azarova et al. 2019; Velasco-Herrejon and Bauwens 2020; Lacey-Barnacle 2020; Swofford and Slattery 2010).

A challenge thus lies in striking a balance between the maintenance of strong attention on democratic and fair issues on the one hand and the need for scaling up activities without being co-opted by market actors on the other hand (Bauwens et al. 2019; Magnani 2021). In this context, it is intriguing to delve into the potential

that energy cooperatives have when it comes to operating on a larger scale because these cooperatives have historically been one of the most diffused forms of energy communities. Taking the form of a community of interest and having thus received less attention since the creation of the new directive on RECs, energy cooperatives play an important role in energy transition. Indeed, these organizations are distinguished by their democratic approach to managing energy production, distribution, and consumption, and their members exercise equitable control. Energy cooperatives not only prioritize social issues, but also educate their members on energy matters (Huybrechts and Mertens 2014). The goals of these organizations are to successfully scale up operations while adhering to cooperative principles as well as prioritizing local community benefits and the well-being of residents near renewable energy projects (REScoop 2020; Wittmayer et al. 2021). This dual approach holds promise for reconciling the community-of-interest and community-of-place approaches, thereby bringing together the benefits of broader collaboration and attention to the specific needs and interests of local communities (Bauwens et al. 2019; Devine-Wright and Wiersma 2013; Walker et al. 2022).

To our knowledge, empirical studies have thus far focused more on the theoretical advantages that energy communities have as communities of place (Bielig et al. 2022). Consequently, in order to fill the research gap, the present article investigates the following two research questions:

1. 1. What kind of benefits can energy communities have when framed as communities of interest?
2. 2. Should we go beyond the traditional dichotomy between community of place and community of interest and instead view the two concepts as being interconnected?

Our objective is to examine the capacity that energy cooperatives have when it comes to using the community-of-interest model of organization to go beyond the traditional limits that the literature has attributed to larger-scale organizations. In this sense, while recognizing the importance that the local context has in citizen engagement, the article uses two case studies of energy cooperatives—namely Ecopower in Flanders, Belgium, and *ènostra* in Italy—to identify potential synergies and collaborations that can transcend geographical community boundaries (Becker and Kunze 2014).

2 Literature review: an idealization of geographical proximity?

In their literature review, Walker et al. (2022) demonstrate that numerous authors have asserted the effectiveness of the community-of-place approach by attributing specific benefits to it in comparison with the community-of-interest approach. This observation aligns with existing literature that emphasizes the potential advantages of prioritizing the community of place as the “idealized form” of energy community (Walker and Devine-Wright 2008; Wirth 2014) for putting citizens at the core of the energy transition by allowing them to change their current practices and to benefit

directly from energy transition (European Commission 2019; Alaton and Tounquet 2021).

More specifically, the community-of-place approach—which is based on geographical proximity—allows citizens living near a given project to be directly involved. The local anchoring of the energy project is a way of both engaging citizens in the energy transition and encouraging interactions by building a form of deliberative democracy in which individuals can meet and exchange views (Seyfang et al. 2013). In this sense, a local approach also contributes to strengthening *social capital* by developing community bonds and creating opportunities for collaboration and cooperation among neighbours through shared initiatives (Savelli and Morstyn 2021). Neighbourhood effects can also lead to increasing the propensity of other citizens to engage in energy transition, for example, by installing their own solar panels (Opiyo Nixon 2019; van der Schoor and Scholtens 2019). This direct citizen engagement—which is seen as a form of energy citizenship—has also been identified as a way of *empowering* inhabitants through capacity-building and collective action (Parag et al. 2013; Schmid et al. 2020).

Additionally, these projects foster the emergence of new opportunities, thereby creating fertile ground for developing technical (Arentsen and Bellekom 2014) as well as more deeply social *innovations* (Murray et al. 2010). This situation can lead to the creation of jobs and can also promote the overall economic growth and development of local communities (Coy et al. 2022).

Furthermore, a crucial issue regarding energy communities is their capacity to use some of their resources to provide *public benefits*, such as raising awareness about climate change or fighting against energy poverty (EU 2020; Doukas and Marinakis 2020; Lai 2023). Scholars such as Bauwens and Defourny (2017) have explored differences across energy communities and have pointed out that non-place-based communities may be more focused on mutual benefits than on public benefits, the latter of which provide for the wider local community. In this sense, renewable energy projects based on the community of place are strongly related to the idea of energy justice, which ensures that the benefits of these projects are fairly distributed among inhabitants while specifically targeting those with the greatest needs (Berka and Creamer 2018; Lacey-Barnacle 2020).

However, while the emphasis on geographical proximity and community of place in energy transition projects has its advantages, it is important to acknowledge that this approach also has shortcomings. Conversely, communities of interest could additionally be seen as a way of addressing the benefits that are generally associated with communities of place (Armstrong and Bulkeley 2014; Apostolopoulos et al. 2020; Magnusson and Palm 2019; Schreuer 2016).

First, the concept of “post-place” theory developed by Bradshaw (2008) challenges the assumption that physical proximity alone guarantees strong social ties and a collective interest in the benefits of a specific territory. As Bradshaw observed, in “bedroom cities”, for example, people may have limited engagement with and attachment to their local community because their primary focus and connections lie outside the immediate geographical area. This situation highlights the need to go beyond the traditional emphasis on physical proximity when analysing energy communities.

In response, some scholars have suggested that communities of interest that focus on cognitive proximities by referring to shared values, beliefs, knowledge, and goals among community members can be more effective at mobilizing citizens and fostering community cohesion (Koopmann et al. 2021). By emphasizing these common understandings and nurturing a collective identity rooted in such cognitive proximities, communities of interest—such as large energy cooperatives—can effectively foster a stronger sense of unity and purpose, even without being physically close together (Magnusson and Palm 2019). As a result, it is also important to consider the potential that energy cooperatives have through the common interests of their members, who can participate in the organizations democratically and develop their own social capital. This process, in turn, facilitates increased collaboration and cooperation among members, which can lead to empowerment and ultimately also to actions at the local level (Vancea et al. 2017).

Another critical point stems from the fact that smaller communities may have difficulty attracting necessary investments and financing for their projects because resources may not be abundant or viable in certain locations. In this sense, the potential for generating energy within a specific community could be limited, thereby posing challenges when it comes to achieving cost-effectiveness and economies of scale (Debizet et al. 2023; Savaresi 2019). This situation is particularly problematic regarding the capacity of such smaller communities to provide public benefits. For instance, implementing actions that combat energy poverty or that enhance people's capacity to better manage their energy consumption within the scope of energy communities could necessitate significant financial resources as well as specific skills and expertise that are often not available at the local level. Such endeavours often demand collaboration, coordination, and the pooling of resources beyond the confines of a single community (Hanke et al. 2021; Savaresi 2020; Vernay et al. 2023).

In this sense, large-scale renewable energy projects led by energy cooperatives can have a more substantial impact on people and places (Nolden 2013). Energy cooperatives that act as a social enterprise on a large scale not only tend to focus on potential benefits for their members, but also have the means to create public benefits for social and environmental targets (Bauwens et al. 2019). For example, REScoop.eu—that is, the European federation of citizen energy cooperatives—emphasizes its strong commitment to the local community and keeps money within the local economy. Moreover, energy cooperatives increasingly often form partnerships with local actors such as municipalities, thereby demonstrating their willingness to remain embedded in their own current localities.

For these reasons, we hypothesize that the dichotomy between communities of place on the one hand and private interests on the other hand could be overstated. Moreover, the idealized perception of communities of place and the perceived suspicion surrounding private interests are challenges that need to be overcome (Walker et al. 2007).

3 Methodology

3.1 Case studies

In order (1.) to delve deeper into this topic, (2.) to fill the gap regarding how cooperatives can function as an organizational form that includes the benefits of both communities of interest and communities of place, and (3.) thus also to overcome the limitations of both types of communities, we examined two prominent European cooperative organizations that are based on communities of interest: namely Ecopower in Flanders, Belgium, and *ènostra* in Italy. Our objective was additionally to address the lack of data in the study of energy communities, which has predominantly produced qualitative analyses. We thus conducted an in-depth exploration in order to better understand how cooperatives can serve as an organizational model that encapsulates the benefits of both communities of interest and communities of place, thereby overcoming the inherent constraints of each organizational form.

Ecopower and *ènostra* share a similar organizational structure, have the status of cooperatives, and are members of REScoop.eu. Ecopower operates throughout Flanders in Belgium, while *ènostra* operates across the entire country of Italy, although the majority of its members are concentrated in Piedmont and Lombardy.

Our objective was to examine how far these two organizations—which are anchored in two different institutional contexts and also have different levels of maturity (see Table 1 in Appendix)—present benefits similar to those generally attributed to communities of place regarding the capacity of these two communities of interest to re-orient the energy market in their respective country towards greater democracy and justice.

This inquiry is particularly pertinent in the current landscape, in which the introduction of RECs has led to a proliferation of energy community models, thereby causing some ambiguity and over-emphasis on residential customers, especially in Italy. Such an approach may undermine the role and impact that energy cooperatives based on communities of interest have in shaping the future of energy markets (Moroni et al. 2019; Vernay et al. 2023). Including these elements in an analysis thus helps to provide a comprehensive view of the external factors involved in determining the scale, scope, and recognition of cooperative initiatives within the broader energy landscape.

In Italy, the current legislation defines RECs based on their proximity to the second electrical substation (e.g. at the scale of a building), which is to be expanded through forthcoming legislation to include the primary electrical substation, thereby emphasizing geographical closeness and leading to a conflation of energy communities' projects with self-consumption activities, in which energy that is consumed has to be strictly located in the same place where it is produced. Additionally, despite their significant historical contributions, long-standing organizations such as *ènostra* are not recognized as major players by the authorities within this framework. Unlike in Italy, the approach to defining RECs in Flanders is notably more flexible and takes into account the specific objectives or activities that the REC aims to pursue (REScoop 2024). In this context, activities such as self-consumption are typically associated with limited geographical proximity. However, organizations such

as Ecopower that function as energy suppliers are still classified under the umbrella of energy communities because Flanders essentially has only one distribution system operator.

3.2 Variables

In order to answer our research questions, in January 2021, we first surveyed members of the two organizations (Ecopower: $N=5114$; ènostra: $N=291$). The study was available for one month on the European Survey platform (<https://ec.europa.eu/eusurvey/home/welcome>). In the survey, we investigated five variables that were derived from the above-cited literature on the supposed social advantages of RECs: namely direct participation, social capital, empowerment, local involvement, and public benefit.

For *direct participation*, we asked the members of these communities of interest about their democratic practices:

“Do you participate in the general assembly?”

For *social capital*, we examined the interactions between members:

“How many people do you generally interact with in the cooperative?”

“Have you also been involved in other associations?”

We additionally asked members about their general feelings regarding their participation:

“On a scale from 1 (= strongly disagree) to 5 (= strongly agree), I do not/would not feel comfortable speaking up during meetings.”

We furthermore asked members about their need to meet physically:

“On a scale from 1 (= strongly disagree) to 5 (= strongly agree), the cooperative should organize more events that bring its members together.”

In order to examine the impact of the cooperatives on their members in terms of *empowerment*, we asked:

“On a scale from 1 (= strongly disagree) to 5 (= strongly agree), being a member of the cooperative has allowed me to develop technical skills and knowledge about how energy works.”

We additionally examined the members’ views on the *innovative capacity* of the cooperatives:

“On a scale from 1 (= strongly disagree) to 5 (= strongly agree), our cooperative can contribute to the development of new sustainable ways of producing and consuming energy.”

We then focused on the interactions between communities of place and communities of interest by investigating the possible bridge between the two concepts through the *local involvement* of the cooperatives’ members:

“On a scale from 1 (= strongly disagree) to 5 (= strongly agree), since I began participating in the cooperative, I have developed a belief in my ability to enact change at the local level.”

Finally, we questioned the capacity of these organizations to create *public benefits*:

“On a scale from 1 (= strongly disagree) to 5 (= strongly agree), I would like the cooperative to further undertake environmental education initiatives, such as engaging with schools.”

“Our cooperative should focus on the most vulnerable individuals in order to alleviate energy poverty.”

For the analysis, we used mostly descriptive statistics. In order to compare the two organizations, we used a Mann-Whitney U test for the ordinal variables and a chi-square test for the “number of interactions” variable.

We subsequently led twenty semi-directive interviews with the shareholders and the executive board of both cooperatives in order to delve deeper into the different dimensions identified above (see Table 2 in Appendix). To do so, we adopted a qualitative approach to identifying and coding the different categories through NVivo: namely feelings that members could have towards their organization, the creation of common norms and practices, and how the members perceived the issue of geographical proximities in the development of renewable energy projects. Finally, we conducted eleven interviews with professionals from the sector (see Table 2 in Appendix) in order to discuss the dialectic between place and interest as well as the potential idealizations and limits of these two approaches. We coded the interviews on NVivo into the three categories of advantages, limits, and synergies.

4 Results

4.1 Participation

Regarding the quantitative results, member participation appears to be relatively low and passive. In the case of *ènostra*, only 18% of the cooperative’s members claimed to attend the general assembly, and for *Ecopower*, the rate is even lower at 10%. Interestingly, the data suggest that the main barrier to greater engagement is scarcity of time rather than lack of interest. A significant number of members claimed to stay informed about cooperative activities, while only 11% of *ènostra* members and 24% of *Ecopower* members claimed to not participate in any cooperative activities at all. These statistics indicates that the cooperatives’ members have genuine interest in their cooperatives but struggle to actively participate in various initiatives. Time was particularly often mentioned as a reason for not being more implicated:

“I would love take the small amount time to attend, but I have a specific agenda. But I do like that they [i.e. the cooperative] provide valuable materials. There is a really good newspaper” (Interview 17: *Ecopower* member).

Members of Ecopower and ènostra also expressed strong trust in the board and its capacity to bring important changes to the energy market (see Table 3 in Appendix). Moreover, the members asserted a willingness to intervene if they believed that the cooperative was heading in the wrong direction (Interviews 15 and 17: Ecopower members).

In this sense, the silent majority's issues are not drastically different from what has been observed in other forms of collective action, even in the case of geographical proximity (Olson 1965).

4.2 Social capital

Concerning the capacity of communities of place to develop social capital, communities of interest appear to have a positive dynamic, as is demonstrated in both cooperatives. First, individuals from the community of interest are very likely to engage with other collectives: Indeed, 61% of Ecopower members and 71% of ènostra members joined new associations after having become part of the cooperative. This finding suggests that involvement in the energy community also motivates these individuals to participate in other social groups. Moreover, around 25% of the cooperatives' members claimed to regularly interact with one or more individuals from their cooperative, and no significant tensions were highlighted during the interactions in either cooperative, especially in ènostra (see Tables 4 and 5 in Appendix).

However, there are also notable differences between the two cooperatives regarding the preferences of their members for proximity. In particular, around 53% of ènostra members expressed a desire for more opportunities to meet, thereby indicating strong interest in direct interactions and engagement. On the other hand, only 24% of Ecopower members claimed to feel the same way, thereby suggesting that they may have a different approach to participation and engagement within the cooperative (see Fig. 1 and Table 5 in Appendix).

This disparity can be explained by two factors: First, Flanders is a smaller territory than Italy¹:

“We can easily defend it [i.e. the cooperative] because we are already a close-knit community. You know, with the wind turbines we build, you are never far away from them, so there's always a sense of proximity. On the other hand, Italy has a much larger area” (Interview 16-Ecopower staff).

Additionally, the presence of well-structured processes within Ecopower plays a significant role in developing relationships between its members. For example, the cooperative proactively organizes various initiatives, such as “energy cafés” held in different localities where the cooperative operates. These gatherings provide an ideal platform for members to come together and discuss their cooperative as well as energy-related matters. By promoting regular interactions, Ecopower successfully blends the concepts of place and interest. Moreover, Ecopower implements specialized groups of individuals who share their expertise on specific issues, which further enhances engagement and knowledge-sharing within the cooperative. On the other

¹ Flanders has 6.6 million inhabitants and an area of 13,624 km².

hand, *ènostra* remains in the process of developing its model of member involvement, which may explain why a higher proportion of its members expressed the desire for more opportunities to meet (Interview 6-*ènostra* staff).

4.3 Empowerment

Additionally, 24% of Ecopower members reported having not gained technical competences related to energy since they had begun participating in the cooperative, whereas among *ènostra* members, this figure is higher at 46% (see Fig. 2 and Table 6 in Appendix

“Ecopower explains things very well and is actively involved in educating people. It really makes you stop and reflect on these matters” (Interview 12-Ecopower member).

This finding confirms that being part of these cooperatives is a transformative process, even for members who might initially be less sensitive to the cooperative’s values:

“I frequently emphasize the fact that merely paying 250 euros for the cheapest electricity in Flanders does not automatically make someone a cooperative member. For example, even becoming a member of a cooperative supermarket in Italy, people may still simply act like a customer. It is the responsibility of the cooperative to inform and educate such individuals and to ensure that over time, they become inspired by the cooperative’s ideals” (Interview 20-Ecopower executive).

The greater performance of Ecopower must also be considered in relation to the fact that the cooperative operates at a larger scale and thus has larger economies of scale as well as stronger competencies. Indeed, Ecopower employs three full-time staff members dedicated to empowerment initiatives. On the other hand, for *ènostra*, the balance sheet is fragile, and finding resources is challenging. Moreover, the Energy ID platform—which is a tool for improving energy efficiency—is actively used by Ecopower members. This disparity in resource availability highlights the different levels of development and operational efficiency between the two cooperatives.

4.4 Local engagement

It is noteworthy that having many members can have a positive impact on the development of more local projects and communities of interest. In this sense, even though they belong to a community of interest, the members of Ecopower and *ènostra* directly impact the geography of energy transitions. Approximately 20% of Ecopower’s members stated that their participation in the cooperative acts as a catalyst for greater engagement in local areas. For Ecopower, this represents a total of 14,000 individuals who may be inspired to get involved in local initiatives due to their connection with the cooperative. On the other hand, the situation is quite different for *ènostra*, 42% of whose members reported having been engaged locally even before joining the cooperative (see Table 7 in Appendix). This finding suggests

that for some members of *ènostra*, involvement in the cooperative is an extension of existing local engagement efforts.

Indeed, members play a significant role in spreading both renewable energy and awareness of their cooperative's model among their neighbours and family through word of mouth, as some members emphasized:

“For sure, I have at least two acquaintances who have signed up with our cooperative. Personally, I have registered three to four residential buildings, so I can confidently say that my efforts will contribute to reducing approximately five to six tonnes of carbon emissions. I have also advertised our cooperative at our local nursery school” (Interview 9-*ènostra* member).

This approach can be a powerful and effective way of both engaging more people in the cooperative's initiatives and expanding its impact in the neighbourhood.

Moreover, the willingness to be locally anchored is institutionalized in both cooperatives through the mechanism of ambassadors, which consist of groups of active members within a specific geographical area. The purpose of this approach is to create small clusters of more involved members who can support the cooperative:

“Given the limited resources of the cooperative, it is not feasible to cover all of Italy and to be present at every opportunity or event. It is thus interesting to use this approach” (Interview 1-*ènostra* executive).

This local engagement of members can even lead to the creation of local RECs that are supported by the cooperatives:

“We brought members of *Ecopower* together, and we instructed them on how to set up many PV projects, and now, we have four new cooperatives in this province” (Interview 20-*Ecopower* executive).

Another step involves being able to provide financial support, which again appears to be easier for *Ecopower* than for *ènostra*:

“We are currently working with other cooperatives on a European project to create new financial options for cooperatives that are still very young and don't have a lot of capital or equity. In *Ecopower*, we are financially quite healthy. Because of that, we are also in a position to be able to help smaller groups and give them a kick start to get their first project and to become financially more independent and have their own projects” (Interview 17-*Ecopower* staff).

This dimension is of the utmost importance because local energy communities frequently need to forge partnerships in order to be able to access resources. Moreover, these alliances need not exclusively involve citizen actors; rather, they can also extend to private utility companies that follow another institutional logic (Goedkoop and Devine-Wright 2016; Wittmayer et al. 2021).

4.5 Public vs mutual benefits

Finally, in our analysis, it is also important to distinguish between public benefits and mutual benefits (Bauwens and Defourny 2017). For example, we observed two

distinct patterns among both cooperatives: Specifically, the data reveal that ènostra members exhibit higher levels of proactivity when it comes to engaging with public welfare initiatives (see Fig. 3 and Table 8 in Appendix). These ènostra members are much more likely than the members of Ecopower to agree to support activities that promote environmental awareness in schools and that combat energy poverty. However, at the executive level of the cooperatives, the opposite trend can be observed since the executive of ènostra has not yet fully addressed these issues, whereas the board of Ecopower strongly prioritizes the public benefit dimension of the cooperative's initiatives. Consequently, despite the low interest of its members, the processes in Ecopower are currently more structured, although the implementation of concrete action requires time and effort in order to correctly frame these issues:

“We invest money in the local community in order to build eco-friendly gardens or install electric charging stations [...], but then, nothing happens [...]. For energy poverty, we now take time and work with associations that are specialized in this field in order to avoid being too paternalistic” (Interview 14-Ecopower staff).

Interestingly, the focus of Ecopower's board on the social dimension can also influence Ecopower members:

“When I became a member, it [i.e. this focus] wasn't a major concern, but later on, it became a significant aspect for me” (Interview 18-Ecopower member).

Finally, growing economies of scale that enable more resources can play an important role in Ecopower's ability to provide public benefits that have a deep impact, especially for citizens living in energy poverty. As the cooperative scales up, it becomes more widely known and attractive to those less familiar with this issue, thereby enabling more citizens to benefit from lowest energy prices.²

5 Discussion

Our results suggest that it is necessary to re-evaluate the traditional classification of the advantages of communities of place and communities of interest (C. Walker et al. 2022; Coenen and Hoppe 2022). Energy cooperatives that prioritize shared interests over mere geographic proximities succeed in forging connections among members and in fostering energy skills. These objectives are generally attributed to communities of place. Furthermore, our analysis shed light on the complex interplay between place-based initiatives and communities of interest and suggested that these concepts—when aligned with a cooperative's core values—can mutually enhance the development of energy communities.

The existence of cooperative models plays a crucial role in counterbalancing and preventing the influence of private actors in the energy sector. In this regard,

² Last year, Ecopower's members had an average reduction of €500 on their invoices compared with other suppliers, which can be explained by the fact that Ecopower does not follow a market logic and does not keep margins.

Italy—where energy cooperatives are less developed—appears to be an example of this trend when designing RECs with restricted proximities. As observed in other countries:

“The entire debate on EC is being overshadowed by the discussion of self-consumption. Many industrial actors are trying to use the concept of renewable energy communities to broaden the regulatory framework of collective self-consumption” (Interview 31-Researcher IDRI).

According to our interview with an expert from the University of Padova, restricted proximity may cause RECs to become a niche market (Interview 25-economics professor), thereby also leading to the adoption of practices that prioritize technological control over community-driven approaches. There are also concerns about the whether the REC may become a type of privileged club, thereby increasing inequalities within society. Those who are not part of this club might also face higher prices and less advantageous conditions (Interview 22-head of the RSE research group).

In response, energy cooperatives such as *ènostra* that operate on a large scale play a crucial role in fostering the concept of an energy democracy. Through their consulting services and event organization, the cooperatives ensure that the benefits of the projects that they pursue are directly conveyed to citizens, thereby offering a compelling alternative to the prevailing market-driven approach, which pays special attention to the social lens of these projects. However, the potential of *ènostra* to affect such change is conditional on the cooperative’s limited resources and its ability to grow, as has been demonstrated by *Ecopower*.

Conversely, in Flanders, despite the growth of place-based projects, energy communities continue to focus on coordination, empowerment, and scaling up. This situation is largely due to the fact that cooperatives such as *Ecopower* are currently adopting the community-of-interest model (Interview 28-project manager at the Flemish cooperative *Beauvent*) (Bauwens et al. 2019). For example, *Ecopower* has recently united Flemish cooperatives in order to respond collectively to the call for tender:

“There are new offshore wind projects, and there is an attempt to legally mandate that 20% of these projects be owned by cooperatives. *Ecopower*’s scale allows it to actively participate in such initiatives, which would not be possible if it were composed only of small entities” (Interview 12-*Ecopower* member).

By prioritizing citizen participation over mere investment and emphasizing models of democratic governance, these citizen-led cooperatives act as social enterprises and disrupt the market dynamics that prevent the energy transition from being dominated by private actors (Magnani 2021). Moreover, the cooperatives avoid the risk of keeping RECs in an undeveloped state if energy communities are solely perceived as communities of place.

In parallel, cooperatives can also support the development of more local projects in which the cooperative operation of larger-scale initiatives may not be effective for certain activities (e.g. district heating or self-consumption) and can contribute to the construction of an energy democracy in which each citizen can take part,

including citizens from places with limited resources and/or who seek more tangible community interactions. In this context, the community-of-interest model emerges as a solution by offering resources for individuals to develop local projects while maintaining shared community values (Interview 17-Ecopower staff).

For example, in Eeklo, an urban solar project operates as a community of place and was initiated by Ecopower in collaboration with Volterra, another cooperative. The project allows all residents of Eeklo to invest in and become co-owners of solar installations—a project that could not have emerged without the technical and financial support of Ecopower and that strongly focuses on public benefits by looking for solutions that fight against energy poverty.

For these reasons, it is necessary to adopt a hybrid approach that combines both the community of place and the community of interest, especially in countries where civil society has had difficulties tackling energy transition (Candelise and Ruggieri 2020; Magnani and Osti 2016). Energy cooperatives could play the role of facilitator, aggregate these projects, and better coordinate them both economically and socially:

“Energy cooperatives can be seen as a larger entity that includes several local energy communities. It’s like an archipelago with projects linked together through a federation that could be the cooperative” (Interview 4-*nostra* staff).

Therefore, we acknowledge the need to recognize that energy communities either place interest in or promote a democratic and community-oriented energy transition, thereby fostering the potential empowerment of individuals and their territories (Brisbois 2019; Coy et al. 2021; Velasco-Herrejon and Bauwens 2020).

In this sense, we advocate for the recognition both of the limitations that are inherent in the current definitions of proximity and of the lack of emphasis on communities of interest at academic as well as policy-making levels. Energy communities should thus be inherently reconceptualized as primarily a function of political economy rather than as purely technical projects based on grid infrastructure.

Although our investigation was limited to two case studies, we were able to identify potential trends. Therefore, we advocate for further research in order to uncover the full potential that energy communities have to operate as communities of interest. However, it is equally important to closely examine the factors that may enhance the success of CECs, especially the institutional support that is crucial for the growth of these initiatives (Ahlemeyer et al. 2022). In parallel, more research should also be conducted on the role of aggregators, which is currently growing via the development of small and locally based projects. Finally, a particular focus should additionally be placed on market actors who could engage in these initiatives, especially within the IEMD.

6 Appendix

Table 1 Descriptive data of both cooperatives

	Date of creation	Number of members	Production (KWh)
Ènostra	2014	9806	1
Ecopower	1991	64,114	75

Table 2 Interviews

Name	Function
Interview 1	Ènostra' executive
Interview 2	Ènostra' shareholder
Interview 3	Ènostra' executive
Interview 4	Ènostra' administrative
Interview 5	Ènostra' administrative
Interview 6	Ènostra' administrative
Interview 7	Ènostra' administrative
Interview 8	Ènostra' administrative
Interview 9	Ènostra' shareholder
Interview 10	Ènostra' shareholder
Interview 11	Ènostra' engineer
Interview 12	Ecopower' Shareholder
Interview 13	Ecopower' Shareholder
Interview 14	Ecopower' administrative
Interview 15	Ecopower' Shareholder
Interview 16	Ecopower' administrative
Interview 17	Ecopower' Shareholder
Interview 18	Ecopower' Shareholder
Interview 19	Ecopower' administrative
Interview 20	Ecopower' executive
Interview 21	Consultant on energy communities-Italy
Interview 22	Head of research group at Ricerca sul Sistema Energetico-Italy
Interview 23	Responsible for Rose Smart energy platform-Italy
Interview 24	Senior Policy Advisor at REScoop.eu
Interview 25	Economic professor at the University of Padova
Interview 26	Professor at the University of Utrecht
Interview 27	Executive of the company Koala-Italy
Interview 28	Project developer of the cooperative BeauVent-Flanders
Interview 29	Coordinator at the Centrales Villageoises-France
Interview 30	Urban planner-Flanders
Interview 31	Researcher at the IDDRI

Table 3 Variable distribution: Our cooperative can contribute to the development of new sustainable ways to produce and consume energy

Cooperative	Our cooperative can contribute to the development of new sustainable ways to produce and consume energy		Mann- With- ney <i>P</i> -value
	Ènostra	Ecopower	
Strongly Disagree	0	0.37	0.00
Disagree	0	0.35	
Neither agree nor disagree	5.21	2.54	
Agree	23.26	43.43	
Strongly agree	71.53	53.3	

Table 4 Number of interactions between cooperatives members

	(in %)	Ecopower (in %)
Nobody	75.35	74.13
One people	10.42	12.56
Two people	7.99	6.40
Three people	6.25	6.91

Pearson $\chi^2(3) = 2.2932$, $Pr = 0.514$

Table 5 Variables distribution sociability (%)

Variables	I do not/would not feel comfortable speaking up during meetings		Mann- With- ney <i>P</i> -value	The cooperative should organize more events that bring its members together		Mann- Withney <i>P</i> -value
	Ènostra	Ecopower		Ènostra	Ecopower	
Cooperative						
Strongly Disagree	20.49	3.44	0.00	7.27	1.49	0.00
Disagree	9.72	10.48		11.76	19.05	
Neither agree nor disagree	56.94	78.78		27.34	55.28	
Agree	8.33	6.16		27.34	21.13	
Strongly agree	4.51	1.13		26.3	3.05	

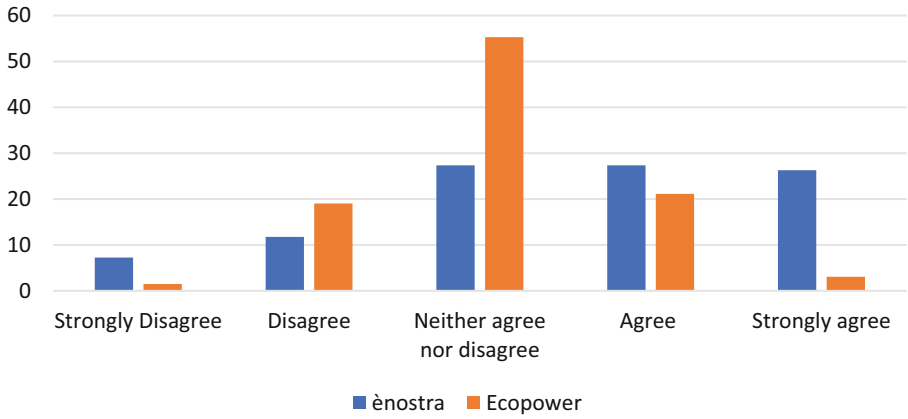


Fig. 1 Variable's distribution: The cooperative should organize more events that bring its members together

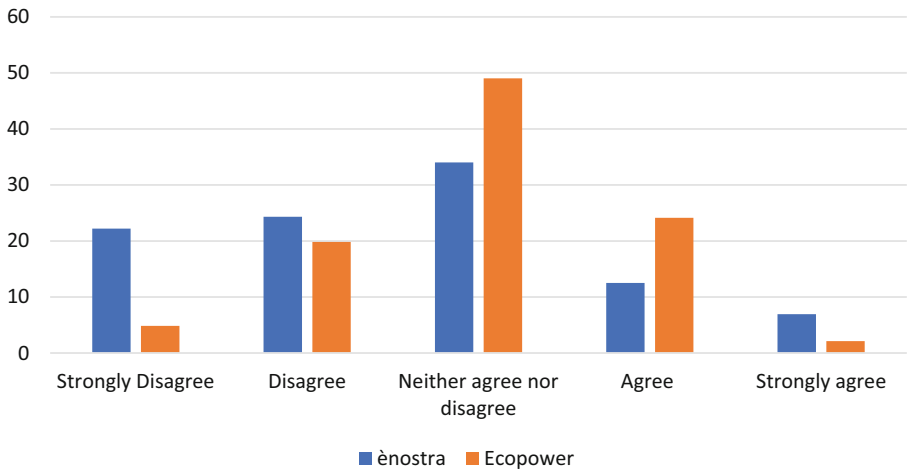


Fig. 2 Variables' distribution: Empowerment: Being a member of the cooperative has allowed me to develop technical skills and knowledge about how energy works

Table 6 Variable distribution: Being a member of the cooperative has allowed me to develop technical skills and knowledge about how energy works (%)

	Being a member of the cooperative has allowed me to develop technical skills and knowledge about how energy works		Mann-Whitney
Cooperative	Ènostra	Ecopower	<i>P</i> -value
Strongly Disagree	22.22	4.85	0.00
Disagree	24.31	19.84	
Neither agree nor disagree	34.03	49.04	
Agree	12.5	24.14	
Strongly agree	6.94	2.13	

Table 7 Variable's distribution: since I began participating in the cooperative, I have developed a belief in my ability to enact change at the local level (%)

	Since I began participating in the cooperative, I have developed a belief in my ability to enact change at the local level		Mann-Whitney
Cooperative	Ènostra	Ecopower	<i>P</i> -value
Strongly Disagree	14.09	5.52	0.00
Disagree	12.37	15.53	
Neither agree nor disagree	18.56	42.10	
Agree	7.22	15.32	
Strongly agree	5.50	3.64	
I was already doing it	42.27	17.9	

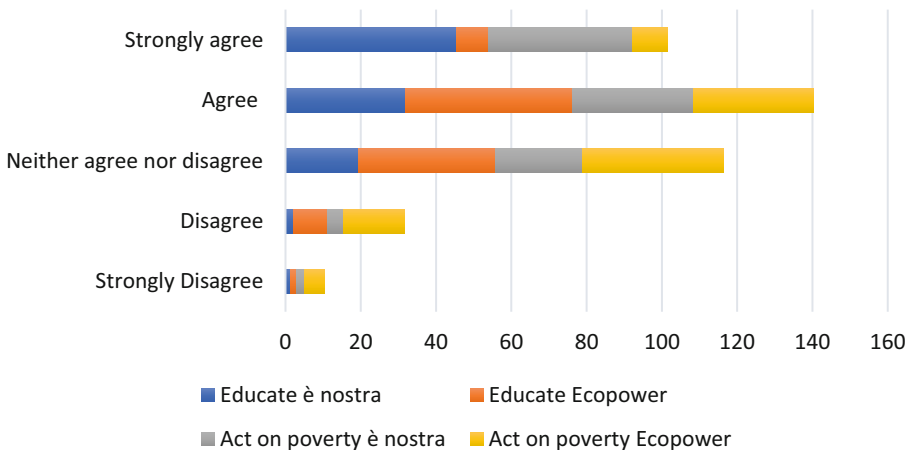


Fig. 3 Variables' distribution: Public benefits

Table 8 Variables' distribution: Public interest (%)

Variables	I would like the cooperative to further undertake environmental education initiatives, such as engaging with schools		Mann- With- ney	Our cooperative should focus on the most vulnerable individuals in order to alleviate energy poverty		Mann- Withney
	Ènostra	Ecopower	<i>P</i> -value	Ènostra	Ecopower	<i>P</i> -value
Cooperative						
Strongly Disagree	1.38	1.64	0.00	2.08	5.14	0.00
Disagree	2.08	9.19		4.15	16.28	
Neither agree nor disagree	19.38	36.29		23.18	37.52	
Agree	31.83	44.39		32.18	31.83	
Strongly agree	45.33	8.49		38.41	9.23	

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