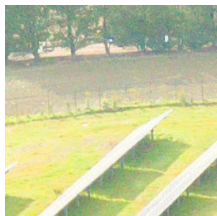




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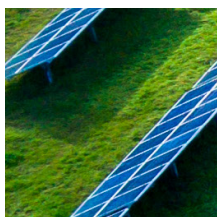
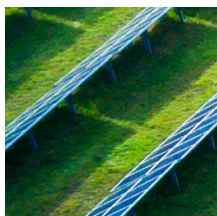
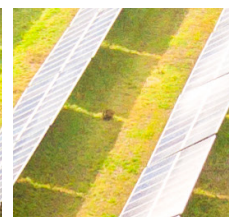
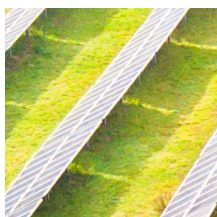
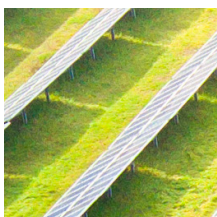
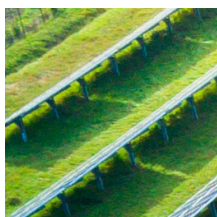
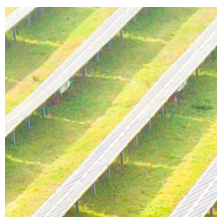
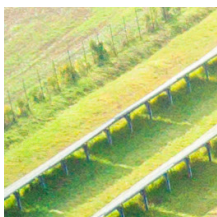


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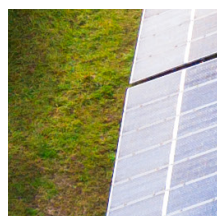
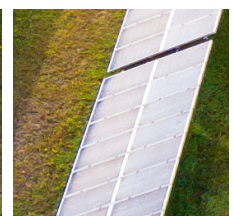
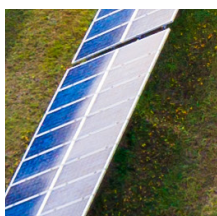
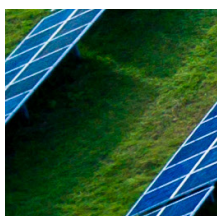
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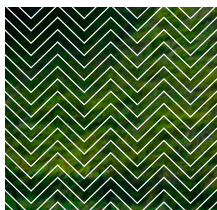
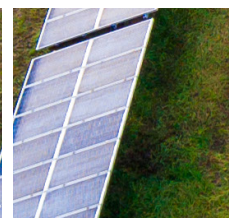
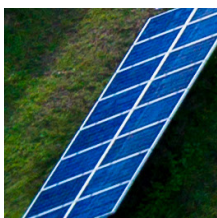
# THE FUTURE OF RENEWABLE ENERGY COMMUNITIES IN THE EU

AN INVESTIGATION AT THE TIME OF THE CLEAN ENERGY PACKAGE



RESEARCH  
REPORT

AUGUST 2020



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# The Future of Renewable Energy Communities in the EU

**An investigation at the time of the Clean Energy Package**

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# Executive summary

## Chapter 1 – Literature review

A literature review is conducted whose purpose is to describe the multifaceted phenomenon of renewable energy communities (*RES communities*) in the electricity sector. The number of relevant studies, which often relate to the broader notion of *community renewable energy* (CRE), has steadily increased over the past decade, resulting in an abundance of knowledge and perspectives that span many diverse fields. The review focuses on four particularly relevant topics: a) the identification of RES communities (*what are they? what characterizes them?*); b) their motivations (*what motivates the action of the communities and their members?*); c) the contextual factors (*which contextual factors influence the birth and development of RES communities?*); and d) their societal impacts (*what impacts do RES communities have on society, including and beyond themselves?*). The literature is characterised by the large use of case studies, often including semi-structured interviews or surveys.

### Identifying RES communities

RES communities come in many different forms, as they often carry out multiple activities, have multiple objectives, their members are driven by different motivations, they can be limited to a more or less wide geographical area, they use different technologies, have different legal forms (and hence different forms of governance), etc. As a result, interpretations can differ as to what exactly constitutes a RES community. In this regard, the element on which consensus appears to be broadest is that the members of a RES community are not only the recipients of potential benefits generated by a *CRE project*, but are also co-owners of the project and so can – and ideally would – participate in the decisions about it. By contrast, consensus is less broad over other defining elements, such as those relating to a) the geographical scope of a community (a related distinction being that between *communities of place* and *communities of interest*), b) the orientation of the community with respect to profits generation (the question being whether genuine RES communities may only be not-for-profit), and c) the possible roles of local authorities and businesses in CRE projects. The scientific literature usually conceptualises these differences without offering normative indications. By so doing, however, it provides valuable input for the development of legal definitions.

### Motivations

A typical feature of RES communities is the multiplicity of their statutory objectives and, as a reflection of that, the multiplicity of their members' own motivations for founding or joining a RES community. The objectives most frequently pursued through CRE projects concern the protection of the environment and the climate, the realisation of economic gains (most often, but not exclusively, energy cost savings), energy autonomy (i.e. the control of choices regarding energy production and consumption), and the development of the local economy. The literature investigating the purposes of RES communities (or specific CRE projects) focuses on the individual motivations of community members. The emphasis is on diversity and dynamics whereby the prevalence of one motivation over others varies a) *between communities*, depending on their specific nature, b) *within communities*, given the heterogeneity of their members, and c) *over time*, depending on how the communities evolve. With regard to the last point, a relevant example is the expansion of a community's activity from electricity production alone to electricity supply. With this step, many new people typically join the community

as consumers (rather than as producers) who may have different prevailing motivations compared to previous community members. In general, while the salient aspect of the motivations is their multiplicity, environmental motivations appear to be most common in the studies examined. Focusing on RES communities established in the last twenty years, *climate protection* emerges as the prevailing environmental motivation. Furthermore, some studies reveal the positive role of social psychology aspects which, for example, concern the enjoyment derived from trusted social interactions and from adhering to a common project.

### **Contextual factors**

The contextual factors that can contribute to determining the birth and evolution of RES communities are many and diverse. They can be classified into physical-, technology-, institutional- and community factors. The literature review focuses on the last two types of factors. Some robust conclusions can be drawn based on the history of many specific CRE projects or more generally of the CRE sector in several European countries. A conclusion very often emphasised is that CRE needs a policy framework which is sufficiently supportive and stable. Adequate policy support would imply the recognition of public value also in small-sized projects or even in the specific role played by RES communities. Support policies such as feed-in tariffs for small-sized projects or tenders only for CRE projects are indeed justified on the basis of such recognition. A stable policy and regulatory framework, however, implies that the same recognition of the role of communities is not limited to a political part. In this sense, becoming mainstream is a desirable scenario for RES communities. Secondly, local authorities can play a key role in facilitating the dissemination of RES communities. However, they would need to have some experience in the energy sector: whether such experience is there may depend on the historical development of the energy system, else it would need to be acquired. Similarly, specific skills within the community are needed to start and manage a CRE project. Furthermore, a RES community is more likely to be established and thrive in the presence of trust in the wider hosting society.

### **Societal impacts**

CRE projects impact society including and beyond the corresponding RES communities. The literature review has focused on societal impacts that concern the local economy, the energy system, the acceptance of the energy transition and the energy-related behaviour of individuals participating in CRE projects. Understanding such effects is central especially for designing appropriate supportive policies. Despite the importance of the topic, however, quite limited research appears to have been conducted to date. Most available studies involve case studies, often including interviews or surveys, but with sophisticated statistical analyses only few and far between. Based on current evidence, it can be said that CRE projects tend to have positive impacts on the local economy and jobs, but the nature and significance of these impacts depend on the specific type of community. Being part of the wider trend towards increasing decentralisation of the energy system, CRE is expected to have significant effects on the system and especially on the distribution network. Further analysis, however, is needed to determine the extent of the positive and negative effects in question. By contrast, research results more clearly back the expectation that CRE increases local acceptance of renewable energy and general support for climate action and renewable energy. Furthermore, membership in CRE projects tends to be positively correlated with more energy-efficient behaviour, increased knowledge and skills as well as to some extent to stronger social trust and capital.

## **Chapter 2 – Case studies**

Three case studies are conducted which concern the Italian cooperative *ènostra*, collective self-consumption (CSC) in France, and an EU-funded innovation project called *WiseGRID*. *ènostra* is a representative example of the modern cooperative model of RES communities and the most significant of its kind in Italy. CSC is a new way of collectively producing and consuming electricity which could result in the emergence of many local RES communities and generate potentially significant societal benefits. In France, CSC has been the subject of intense public debate and relevant legislation has

already been produced. The *WiseGRID* innovation project and, in particular, the Ghent pilot site (Belgium) on which we focus, opens a window on the future of the electricity system as imagined and put into practice by the RES cooperatives leading the project. Each case study is structured into two parts: the first describing the study subject and the second presenting interviews with two or three experts. Taken together, the various aspects captured by the case studies provide a broad picture in which salient are the data acquired regarding: a) the nature and the *raison d'être* of RES communities, b) their evolution, c) their expectations about the future, and d) the role of regulation for their development.

### **Nature and *raison d'être* of RES communities**

A fundamental distinction highlighted by the case studies is the one between what RES communities *are* and what RES communities *do*. For example, RES cooperatives like *ènostra* are the type of RES community best equipped to combine the pursuit of mutual and societal benefits with complex, large-scale activities in the energy system, such as electricity supply. CSC is, by contrast, an emerging model for producing and consuming electricity – an activity – which may give rise to new local RES communities. Besides, for a RES community to be considered as such, as important as *what* the community does is *how* the community carries out its activities. Notably, democratic and effective participation of its members in the decisions regarding the community is normally a requisite for a community to be considered genuine. As regards the *raison d'être* of RES communities, the interviews with leading members of RES cooperatives (*ènostra*, *Ecopower* and *EnergieID*) reveal the recognition of community value that is both intrinsic and functional. The community itself is considered a good not only for the material benefits it offers to its members but also for the immaterial ones: feeling part of a community and feeling empowered makes people happy. The community also has functional value, it being a tool for enhancing the common good. A recurring word in the interviews, which suggests a reason why RES communities respond to someone's needs and, therefore, exist, is *empowerment*. The need addressed by RES communities through people empowerment mainly is that of citizens wishing to take direct action in the energy transition.

### **Evolution of RES communities**

If today the EU Clean Energy Package opens potentially interesting opportunities for RES communities, it is also because especially RES cooperatives have shown that they can be active players in the electricity system and that their activities can benefit society, however difficult quantifying such benefits may be. In general, RES cooperatives exhibit a natural ability to collaborate with local authorities and other subjects with whom they share a certain view of sustainable development and society. Another element emerging from the case studies concerning RES cooperatives is the significance of the expansion of their activity from electricity production alone to electricity supply (and possibly other activities). This is a key step for its implications. The first is that cooperative members no longer cooperate only as producers, but also as consumers, being customers of the cooperative. In other words, the interests of end users are internalised. The second implication is that electricity supply involves a number of additional operations and obligations and, therefore, it requires the acquisition of new professional skills. Thirdly, with the supply activity, the growth potential of a cooperative is greatly expanded, normally exceeding the local dimension. A cooperative that makes this step will likely grow considerably in terms of members and resources available, thus becoming also less dependent on the existence of RES support schemes. A possible consequence of this growth, on the other hand, is that the intensity of the relations between the cooperative members and their effective participation in decision-making processes is greatly diluted. The risk is to weaken or even lose *de facto* a defining feature of genuine RES communities.

### **Expectations about the future**

All the people interviewed in the case studies expressed a certain optimism regarding the future development of RES communities. This optimism is linked primarily to the new prospects offered by the EU Clean Energy Package but remains cautious until the relevant directives are implemented by the Member States. Related risks concern the actual possibility for RES communities to become important players in the electricity market (in the segment of residential consumers and small consumers more generally). The risks mentioned include the insufficiency of support schemes dedicated to RES



communities and the advantages that traditional market players might be able to derive from those schemes by exploiting normative loopholes. Apart from the expected policy choices and regulatory treatment, the growing interest of citizens and local authorities in taking direct action in the energy transition and the fight against climate change is also a reason for optimism. The CSC model, whose future diffusion will critically depend on policy and regulatory choices, raises special hopes. It is a model that, if and when it becomes economically viable (the cost of storage technology is also a key variable in this respect), may involve many more citizens in the energy transition. Some RES cooperatives already participate in pilot CSC projects and, indeed, this is an area where we will likely see much collaboration between RES cooperatives and local RES communities in the next few years.

### **The role of regulation**

The case study on CSC in France highlights the crucial role that policy and regulatory choices have in determining the future of this new way of producing and consuming electricity. In the face of benefits for the electricity system that are certainly plausible but difficult to estimate (in the short term: savings on the operating costs of the public network; in the long term: savings on the expansion of the network), the introduction of a special network tariff for participants in CSC operations is the question that has received most attention in the public debate. The reason for this are the possible consequences that a new special network tariff may have and which specifically concern the risk of opening the door to free-riding behaviours while potentially imposing unfair extra costs on consumers who do not participate in CSC operations. The French regulatory authority has developed an optional special network tariff for a type of CSC operation the effects of which will be assessed in five years. A related issue is the recognition of the possible additional societal benefits of the CSC model (additional to the savings achieved through a more efficient electricity system) which would include the further expansion of RES production and its greater social acceptability (ownership of local projects countering the so-called NIMBY phenomenon), but also the opportunities for economic development and greater social cohesion for local communities. In the face of these additional benefits, which also are plausible but difficult to quantify, a possible special tax treatment of CSC (mainly, reduced taxes on self-consumed energy) and the provision of dedicated support schemes are a central issue in the public debate.

## **Chapter 3 – Conceptualisation and scenarios**

RES communities currently play a limited role in the EU energy system and their future is still largely unexplored. Their potential for development and limits to diffusion can be investigated by conceptualising their functioning and by examining how the legal and regulatory framework treats them. On the one hand, the conceptualisation exercise provides a typology of RES communities and highlights their relative strengths and weaknesses. On the other, the examination of the legal and regulatory framework reveals whether national governments have the possibility to leverage the identified strengths of RES communities and address the corresponding weaknesses to promote their expansion in the coming years.

### **What do RES communities do?**

RES communities are essentially groups of people that, possibly in conjunction with small and medium-sized enterprises and local public authorities, together deal with renewable energy sources. Based on rules and decisions that are chosen collectively, RES communities may produce, supply, distribute, share and consume energy from RES. Two basic dimensions allow mapping the various particular cases of RES communities: the geographical scope at which they operate and the prevailing motivation that drives collective action. The first can be local or dispersed, while the second can be economic or relational. These two dimensions identify four fundamental types of RES communities that are characterised by different strengths and weaknesses. Local RES communities operate at the neighbourhood, village or district level and usually build on the thick social relations that exist among members living close to each other and that favour the implementation of collective initiatives. This strength is counterbalanced by the limited resources that can be mobilised locally and that may prevent

the achievement of an economically efficient production level. On the contrary, dispersed RES communities are active over a wider area and involve members that share some ideas or interests rather than a specific place. This broader geographical scope allows the deployment of a larger amount of resources and a more efficient production level; however, such advantage may be offset by the greater difficulty to coordinate collective action in the presence of thinner social relations among community members. Economics-driven RES communities are motivated by the possibility to achieve higher economies of scale and scope in the production, supply or consumption of renewables by acting together instead of individually. In this case, collective action reduces costs and may attract numerous members. However, the emergence of a more ‘utilitarian’ membership can change the nature of the community and transform it into something more similar to conventional market actors. On the contrary, relation-driven RES communities are motivated by the possibility to develop new relations and forms of interaction, thereby satisfying members’ preferences for specific products and a genuinely communitarian approach to energy. Yet, this key strength of relation-driven RES communities can be counterbalanced by their idiosyncratic nature and the likely higher cost of the services they provide to their members which may limit the potential for growth and scale-up.

### **How does the EU treat RES communities?**

The legal and regulatory framework for RES communities has recently changed due to the adoption of the Clean Energy Package (CEP), which is expected to represent a turning point for the development and diffusion of RES communities in Europe, as for the first time both their very existence and their potential role in the energy transition receive legal recognition at the EU level. Within the Package, Directive 2018/2001 on the promotion of the use of energy from renewable sources (RED II) and Directive 2019/944 on common rules for the internal market for electricity (IEMD) introduce four new legal concepts. Two of them refer to groups of customers, not necessarily organised in communities, to which is recognised the right to be collectively active in the electricity markets and the right to collectively self-consume the energy locally produced from renewables. They are called, respectively, jointly acting active customers (JAACs) and jointly acting renewables self-consumers (JARSCs). The other two concepts refer to two specific types of community-based initiatives in the field of energy that are entitled to an enabling regulatory framework due to their specific characteristics in terms of membership, governance and purpose. They are called, respectively, citizens energy communities (CECs) and renewable energy communities (RECs). The two directives provide a set of rights and duties for these new categories of collective entities and specify a list of obligations that Member States must implement in order to ensure them a proportionate and non-discriminatory treatment and, under certain circumstances, a series of advantages with the aim to promote and facilitate their development. By 2021, all EU Member States will have to transpose the CEP’s directives into national legislation. However, substantial room for manoeuvre is left to them in accomplishing the task.

### **A variety of tools for supporting RES communities**

The implementation of the CEP offers Member States various possibilities to support the uptake of RES communities during the next decade, in particular those operating at the local level. In this regard, the CEP recognises the opportunity – and the related public interest – for groups of people, enterprises and public authorities organised at the local level to invest jointly in renewable power plants, to participate in electricity markets collectively, to share the energy produced, to enter into peer-to-peer trading arrangements, etc. Member States are mandated to ensure that when performing these activities communities are not discriminated or subject to non-proportionate requirements. Moreover, local RES communities that qualify as RECs or are made by JARSCs can benefit from the enabling frameworks that Member States are obliged to adopt. In this case, the right to a remuneration for the energy injected into the grid, the right to be exempt from charges and levies on the energy that does not leave the premises of the community members, and the right to effectively access support schemes for renewables can improve the economics of collective action and ease those financial constraints that represent a frequent barrier to the diffusion of local RES communities. The CEP also enables Member State to support the development and diffusion of dispersed RES communities. However, this happens in a more indirect and partial way since the provisions for JARSCs and RECs are not applicable and those for JAACs and CECs do not specifically target communities dealing with renewable energy.

**What scenarios for the next decade?**

In the coming years, Member States can be more or less supportive of RES communities in general and of specific types of them in particular. This can be the result of them implementing the European provisions for JAACs, JARSCs, CECs and RECs to a different extent and making different choices on the options that the CEP leaves to national governments. Member States can also be more or less supportive by recognising legal models for RES communities in addition to those included in the CEP, by designing renewable support schemes in a way that RES communities other than RECs can have easy access to, or by promoting the emergence of networks of RES communities able to take advantage of their respective strengths and weaknesses and better support each other. During the next decade, it is likely that the relevance of national legal and regulatory choices coupled with the leeway that the CEP gives Member States will translate in a persistent heterogeneity of the national development pathways of RES communities. While in supportive countries RES communities, or at least certain types of them, will thrive, in other less supportive countries they will remain marginal. Convergence of these development pathways cannot be entirely excluded, especially between Member States that share similar conditions and adopt similar legal and regulatory frameworks; nevertheless, it will be probably gradual and become more visible towards the end of the decade because of the time needed to share experiences and learn from each other, to consolidate an accepted regulatory practice on energy communities, and to possibly agree on, develop and implement a more harmonised set of detailed rules at the EU level.