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SONNET – SOCIAL INNOVATION IN ENERGY TRANSITIONS

Co-creating a rich understanding of the diversity, processes, contributions, success and future potentials of social innovation in the energy sector

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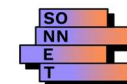
Research report on ‘Renewable Energy Cooperative’ in France



Inauguration of the Bégawatt Windparc (EPV/courtesy of Energie Partagée)



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About SONNET: SONNET is a research project that aims to develop an understanding of diversity, processes, contributions and future potential of social innovation in the energy sector. It is co-funded by the European Commission and runs for three years, from 2019-2022. The SONNET consortium consists of 12 partners across Europe, including academics and city administrations. For more information, please visit our website: <https://sonnet-energy.eu>

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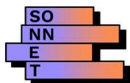
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1 FOREWORD

SONNET (Social Innovation in Energy Transitions) brings diverse groups together to make sense of how social innovation can bring about a more sustainable energy sector in Europe. The project aims to co-create a rich understanding of the diversity, processes, contributions, successes and future potentials of social innovation in the energy sector (SIE). We define SIE as combination of ideas, objects and/ or actions that change social relations and involve new ways of doing, thinking and/ or organising energy. As part of this work, we make use of an embedded case study approach to build a better understanding of the development of diverse SIE-fields (e.g. participatory incubation and experimentation, framings against specific energy pathways, local electricity exchange) over time. Our research questions that frame the case study work are:

- How do SIEs and SIE-fields emerge, develop and institutionalise over time?
- How do SIE-field-actors and other field-actors interact with the 'outside' institutional environment and thereby co-shape the SIE-field over time?
- What are the enabling and impeding factors for SIE-field-actors and other field-actors to conduct institutional work and change the 'outside' institutional environment?

A SIE-field is an arena/space that includes a specific SIE as well as SIE-field-actors working on it and other field-actors enabling and/or impeding it. In this arena/ space these actors take one another and their actions into account and have a shared (but not necessarily consensual) understanding of a SIE and of their relationship to other actors. They recognise (but not necessarily follow) shared norms, beliefs and rules. SIE-fields are often not homogenous but are composed of actors with diverse and contradictory aims and interests. An example: The UK cooperative energy field includes SIE-initiatives and SIE-field-actors (e.g. Brighton Energy Co-op, Cooperative UK, Community Energy England, UK Government, City of Brighton), who have a shared understanding of an SIE, which exists as 'organising under cooperative principles to generate renewable energy'.

The structure of this report is as follows. Section 2 provides a summary of the SIE-field relevant for this report and lists some key insights. Section 3 outlines the boundaries of the SIE-field and shows how it has been studied in the country context. Section 4 shows a visual development of the SIE-field. Section 5 tells the historical development of the SIE-field over time, including analytical/ interpretive reflections from the SONNET researchers and quotes from the actors involved in the field developments. Section 6 outlines key research findings, providing answers to the three research questions. Section 7 outlines recommendations for policymakers based on the findings. Finally, Section 9 outlines the methodological approach and includes a more detailed timeline of the SIE-field and its actors.

2 Renewable Energy Cooperatives

In the field ‘renewable energy cooperatives’ (REC), we focus on organisational models through which citizens jointly own means of and participate in renewable energy production and which comply with the cooperative principles provided by the European federation of renewable energy cooperatives (REScoop) and by the International Co-operative Alliance (ICA) respectively (ICA n.d.; REScoop n.d.). These principles include i) concern for community, ii) voluntary and open membership, iii) democratic governance of the undertaking, and iv) autonomy and independence. In France, these organisations do not always have a cooperative legal status and label themselves “citizen renewable energy projects”. They do however follow the aforementioned cooperative principles. Around 200 projects have been established since 2000. Even though several pioneering projects originated from anti-nuclear groups, the movement currently emphasises discourses on decentralisation, local development and citizen appropriation of the energy system. These energy cooperatives provide the organizational form for citizens to jointly finance, build and run renewable energy facilities. They thus imply a shift in the role of citizens vis-à-vis the established energy system from passive consumers and voters to active prosumers which are engaged in investment decision-making at the level of individual facilities.

Key insights

For the SONNET project, renewable energy cooperatives (REC) in France are particularly interesting for three reasons. First, they are a rather new phenomenon in France initiated less than twenty years ago by a few pioneers that wanted citizens to take control back on energy-related decisions (Sebi and Vernay, 2020). As such, REC propose a new way of doing in the energy sector: REC are about producing renewable (instead of largely nuclear power) and they are about placing citizens at the heart of the governance of these renewable energy production facilities. Second, giving citizens the possibility to take part in energy decision-making is especially innovative in a country where the electricity sector was historically developed in a very centralized and top-down manner. And third, the field has reached a pivotal phase. Indeed, cooperative models for renewable energy are forced to scale up because of decreasing financial support from national policies. This is pushing actors in the field of renewable energy cooperatives to evolve, rethink how they interact with already well-established actors and imagine new business models.

In particular, this report illustrates that:

- REC represent an innovative way to involve citizens in the energy transition by giving them the possibility to invest and take part in the governance of local renewable energy projects.

- REC are strongly dependent on public support. In France, regional public authorities as well as stimuli from the European level have been and still are key to creating enabling conditions for REC to develop in France.
- Policy making process is clearly favouring large centralised projects creating a difficult environment for the development of REC in France and forcing REC to develop strategies to develop bigger projects and/or diversify their activities.
- REC emerged and developed as an alternative to the system and a small independent niche
- Because of the decarbonized electricity mix in France, cooperative models for renewable energy have difficulties using climate change as an overarching umbrella to communicate what they do to the broader public. Instead they focus other notions such as access to governance and having a positive impact on the local economy
- Gatekeeping is a very important process for REC in France and intermediary organisations are negotiating which criteria should be applied to label a project as REC
- Intermediary organisation are advocating for their definition to be recognised by national governmental bodies when designing policy instruments to support citizen-led renewable energy projects.

3 Introduction to Renewable Energy Cooperative in *France*

This report investigates REC in France. In accordance with the SONNET case studies on this topic in Switzerland and Germany, REC refers to organisational models through which citizens jointly own means of and participate in renewable energy production. Primarily, RECs aim to finance and operate renewable energy power plants but can also have other goals such as to sensitize local actors to the potential of local renewable energy and energy savings. To determine what constitutes a cooperative organisational model, we rely on the cooperative principles provided by the European federation of renewable energy cooperatives (REScoop) and by the International Co-operative Alliance (ICA) respectively. These principles include i) concern for community, ii) voluntary and open membership, iii) democratic governance of the undertaking, and iv) autonomy and independence (ICA, 2015; REScoop, 2020). At the organisational level, the cooperative principles can be implemented through a legal cooperative statute. However, what principles are represented in a cooperative statute varies from one country to another. Also, organisations with other statutes can adopt the cooperative principles without having a cooperative status. To explore the boundaries of the REC field in each of the investigated countries, we started with organisations adhering to the cooperative principles and identified empirically in which arena most of them are embedded. Due to peculiarities in the countries' institutional frameworks, we used different strategies to arrive at the boundaries of the field of renewable energy cooperatives.

In France, REC do not always have a cooperative legal status. Instead, we find various legal forms such as social cooperatives (SCIC, société cooperative d'intérêt collectif), simplified limited company (SAS, société par action simplifiée), associations, limited partnership with a share capital (société en commandité par action) and semi-public companies

(société d'économie mixte). Nevertheless, granting local investors access to the governance of renewable energy projects is a shared ambition of REC. Previous research showed that REC do not all give investors access to project governance in the same way and two models co-exist. On the one hand, we find REC with voting rights based on the equality principle (employing a "one member, one vote" logic). These communities are driven mainly by citizens. On the other hand, other RECs offer members legal and financial responsibilities that are proportional to their capital contributions (Sebi and Vernay, 2020). For France, we thus decided to use as boundary of the field the membership in the intermediary organisation "Energie Partagée" which federates projects respecting their definition of "citizen energy projects". The charter of this organisation have several principles resonating with the ICA Alliance principles (see table below). The members do not necessarily adopt a cooperative status, but they are committed to respect the charter so we chose to include them in the field as cooperative organisations.

Table 1 - Respect of Cooperative principles by French citizen energy projects

ICA principle	Energie Partagée charter
Voluntary and Open Membership	Active citizen involvement
Democratic Member Control	Democratic and cooperative governance
Economic Participation through Direct Ownership	Economic concern, Non-speculation, Local value creation
Autonomy and Independence	Partnership with local authority
Education, Training and Information	Pedagogy around energy
Cooperation among Cooperatives	Support emerging projects
Concern for Community	Social concern, Local anchorage
	Ecological concern

In France, the main activity of REC is to raise crowd equity in order to finance and operate renewable energy power plants. REC are however not limited to producing renewable energy. By exchanging with REC initiatives and participating to various workshop, we observed that many are for instance trying to diversify their activities to include activities related to energy literacy and energy efficiency. This report analyses REC from the early 2000 when they started to emerge in France until summer 2020. The analysis will especially focus on the period between 2015 and 2020. This is because the adoption of the Energy Transition Law for Green Growth (LTECV) made it possible for citizens and local authorities to jointly invest in local renewable energy production projects (Peullemeulle & Duval, 2017), leading to a sharp increase in REC initiatives.

Energie Partagée, the organisation that maps out REC in France counted 204 REC existing in 2020. REC in France are active regarding diverse energy technologies: rooftop PV, solar farms, wind farms, small hydro, biogas and biomass power plants. It is important however to mention that the movement is largely dominated by cooperatives that develop small rooftop

projects (they represent 63% of all the cooperatives (Sebi and vernay, 2020). Besides, there is an important geographical heterogeneity with a majority of project in three regions: Occitanie, Brittany and Auvergne Rhône-Alpes (see figure 1). Many projects are initiated by citizens with their local municipality, even though a few may be the result of citizen initiatives alone or may have been started by a project developer. In this report, we analyse in more detail two examples of REC. The first is Energie en pays de Vilaine (EPV) (see box 1), which was the first REC to develop a citizen-owned wind park . EPV has since been an example for other projects. The second is Buxia Energies (see box 2), which is an example of a REC that develops rooftop solar project. Interesting in Buxia Energies is that they are a successful example of REC, yet as we will see, they face a number of challenges to be able to continue to grow. Moreover, they have also initiated reflexions on whether, how and why they should diversify their activities.

Despite the recent emergence of citizen projects during the 2000's, REC are already well organised around three key actors that support their emergence. First, we find Energie Partagée. This organisation presents itself as the movement for citizen led renewable energy and is composed of two main legal entities. First, Energie Partagée Investissement, a limited partnership with a shared capital (Société en commandité par action) that gathers investment and funds renewable energy projects. Second, Energie partagée Association, a non-profit association subsidized by ADEME (national agency for the environment and energy) that federates citizen energy actors and facilitates exchange and training within the network. Energie Partagée Association is organized through regional networks whose structure may differ depending on the historical trajectories of the region. It organises some peer-to peer exchanges but also relies on paid workers to coach projects. Energie Partagée has a central role in lobbying for more supportive policies.

The second important actor is **Association des Centrales Villageoises**. It emerged in parallel to Energie Partagée association in the Rhône Alpes region. This network promotes and federates a specific type of project based on photovoltaic rooftops clusters, strong territorial anchorage, direct citizen governance and peer-to-peer mentoring between initiators of projects that share expertise and help one another. The Centrales Villageoises relies on a “turnkey” solution to replicate its initial model of PV cluster and propose tools like ready-to-use contracts, statutes, etc... The federation relies almost only on volunteers and its board is composed only of citizen project members. New projects often emerge through word-of-mouth and demonstration effect of an existing project. Centrales Villageoise and Energie Paratgée are currently building a partnership.

The third key actor is **Enercoop**. Enercoop is a multi-stakeholder cooperative created with the aim to be an alternative to incumbent energy suppliers and provide 100% green electricity. The cooperative started its energy supply activity in 2005. It marginally developed energy efficiency services and renewable energy production, but decided in 2020 to engage more strategically into energy production. Enercoop is also a founding member of Energie Partagée and accompanies REC locally with its technical expertise. Enercoop wants to be a “steppingstone for citizen dynamics” (FR-WP3-COOP-SIE-3).

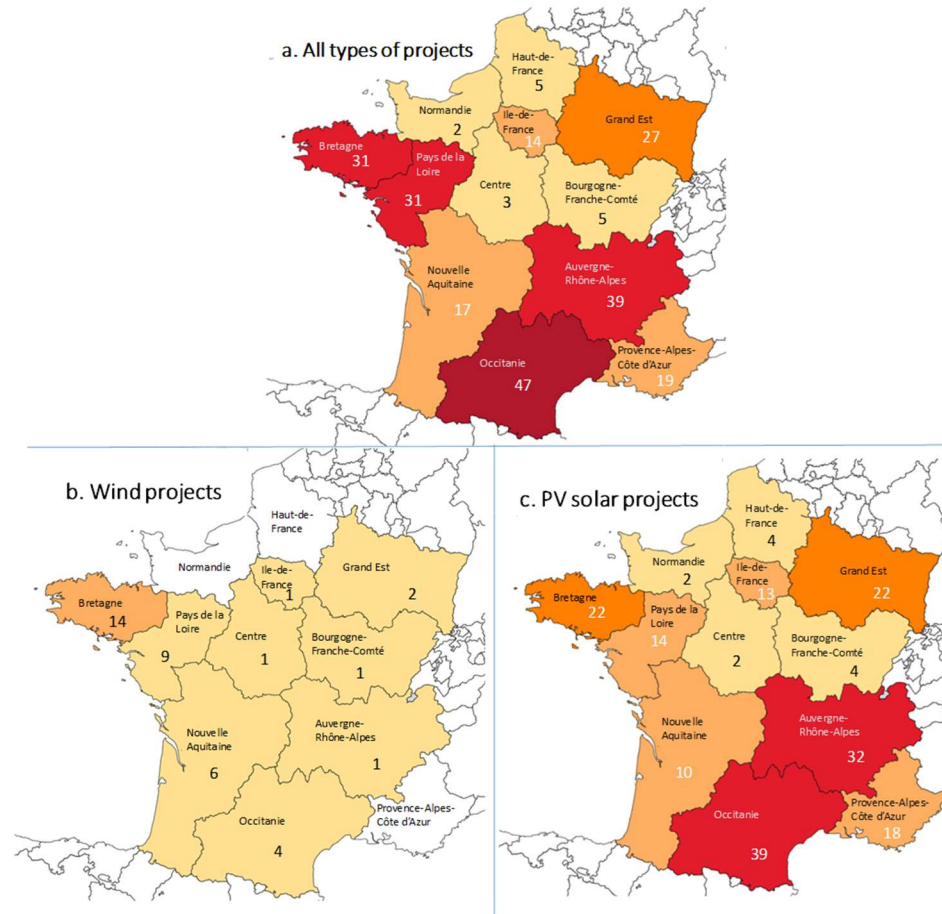


Figure 1 – Mapping of citizen energy projects, how deep the colour highlights regions where most project are present. Source : (Sebi & Vernay, 2020)

Our projects are financed by local people with the objective of making the regions work first and foremost and that the economic benefits stay in the region (Interview FR-SIEI-pre2)

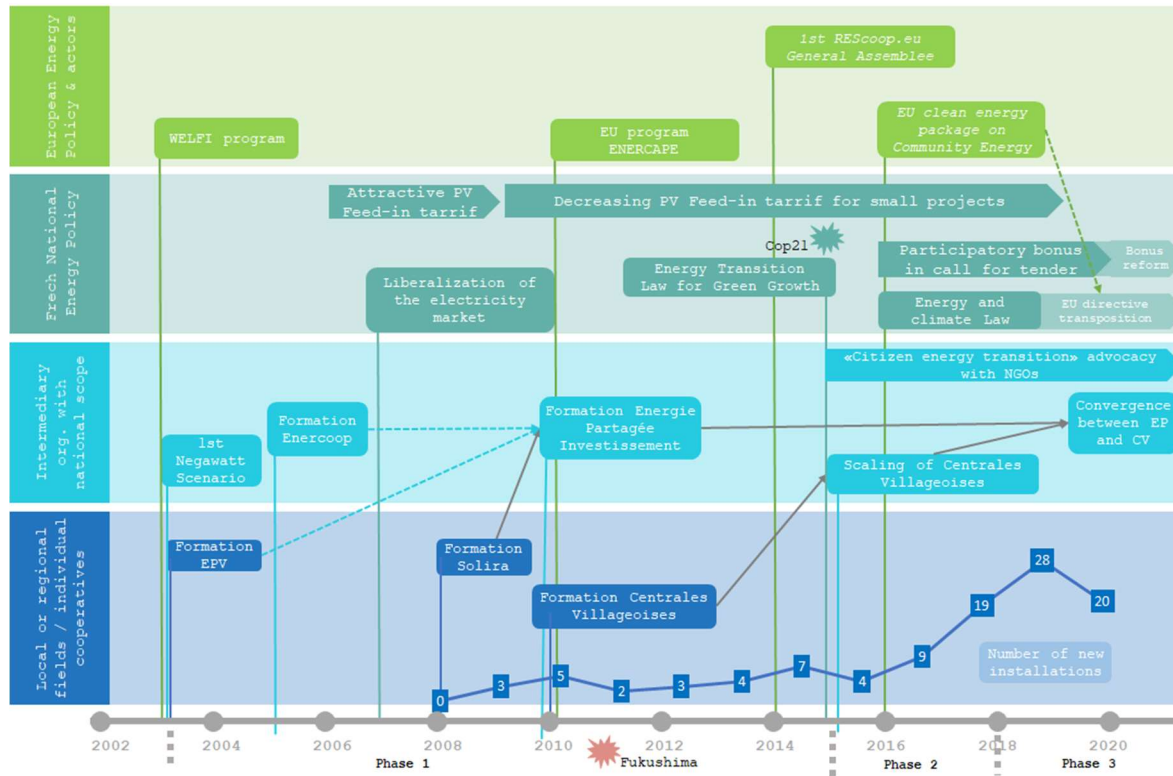
Even though these three actors are central in helping REC in France, the capacity of REC to emerge and develop also depends on the presence of supporting organisations locally (Vernay and Sebi, 2020). In France, we find a number of organisations supported by ADEME that animate the network of and facilitate knowledge exchanges between REC locally. These regional networks are often animated by actors who were often local pioneers: Energie Partagée (Ile-de-France, Provence-Alpes-Côte-D'azur), Enercoop (Occitanie and Nouvelle Aquitaine), AURAEE (former Rhônalpénergie-Environnement who initiated the Centrales Villageoises model) (Auvergne-Rhône-Alpes), Eoliennes en Pays de Vilaine (Bretagne and Pays de la Loire). These networks have different business models and can rely on membership fees or service sales to sustain themselves but are not fully self-sufficient and rely on ADEME and regional funding's. Finally, surrounding REC we also find additional actors such as project developers that REC work with when they develop solar or wind farms. The distribution system operator (Enedis) that grants access to the grid is also a key actor, such as EDF (the national electricity supplier in France) that often buys the power generated by REC. Finally, we also find banks and insurance companies, and the Commission for Energy Regulation (abbreviated CRE in French) that regulates the sector and advises the government about appropriate support schemes.

To conclude, what is innovative about RECs is that they represent a novel way of doing energy, one where citizens are engaged in investment decision-making at the level of individual facilities. Engaging and motivating people locally to become actors in the energy transition, is for some REC even more important than being able to produce renewable energy. In fact, REC are quite aware that their energy production is anecdotal in the global French electricity mix (Sebi & Vernay, 2020) and instead communicate very much on the fact that REC are "by and for the territory". By this, is meant that project developed by RECs benefit the local economy, activate local social life and create the possibility for a local dynamic around energy transition to emerge (see for instance Rüdinger, 2019). This resonates with findings from previous studies that showed how REC try to appeal to people interested in contributing to projects that can benefit their local communities (Boon & Dieperink, 2014; Proudlove et al., 2020). Moreover, previous research highlighted that giving citizens a voice in energy decision-making forces participants to develop projects that really benefit the local community and as such contributes to more energy justice (Forman, 2017). This is also illustrated by a quote from an interviewee: "the big difference (with standard projects) is that we are willing to make changes in the project to limit the impact on the territory and to respect the territory in which the inhabitants who carry the project live" (FR-WP3-COOP-SIE-1)

Our objective it is not to produce electron. It is to mobilise citizens of the Grésivaudan (Interview FR-SIEI-pre1).

4 Timeline of Renewable energy cooperative in France

The timeline below presents the main development phases of the REC field in France. In the first phase, we observe the emergence of pioneering actors, supported by EU programs. The second phase shows a short period of development of REC. The third phase initiates a phase of convergence of actors and the beginning of a public recognition of their action.



5 Emergence and development of Renewable Energy Cooperative over time

Phase 1: 2003 – 2015: emergence of the field through the creation of intermediaries

A struggle around technical narratives

The emergence of REC in France can be traced back to the early 2000s. Between 2000 and 2010, the French government slowly started to implement EU liberalisation measures (Andriosopoulos & Silvestre, 2017) meant to make the sector more competitive and innovative and accelerate its decarbonisation by spurring competition between companies (Ringel, 2003).

By then in France, the electricity sector was dominated by national champion EDF (the state-owned producer, distributor and supplier of electricity). EDF was created after the end of the Second World War to accelerate the electrification of France and provide access to affordable electricity via the large-scale implementation of nuclear power plants (Defeuilley 2001). Until the 2000's, the French energy policy was based on an industrial policy aiming at strengthening national energy champions (Andriosopoulos & Silvestre, 2017). A close network of actors including the directors of public utilities and the central administration determined the energy policy jointly. These technical elite shared similar training (like Ecole des Mines), values and intellectual vision and defended a productivist approach massively based on nuclear generation of electric power (Aykut & Evrard, 2017). Electricity sector is for this reason extremely centralised and citizens have long been (or felt) excluded from energy decision-making (Bauby and Boual 1994).

In France, the anti-nuclear movement emerged from the 60's but does not obtain any political victory. The stability of the nuclear choice is explained by the coherence of the public policy community mentioned above, and the weakness of counter-expertise in the energy domain. A technical counter-narrative will emerge only in 2003 with the publication of the négaWatt scenario (Aykut & Evrard, 2017). The negaWatt scenario, or its 3 principles of energy transition "sobriety, efficiency and renewable energy", is a source of inspiration for many cooperative initiatives. But despite a context of controversies around nuclear energy, incumbents are still defending this technology by reframing the energy transition as a transition toward a "low-carbon" energy system including nuclear power as a low carbon solution to avoid fossil energies (Aykut & Evrard, 2017).

The 2012 presidential election following the Fukushima incident initiates a shift in energy policy by setting as goal to reduce the share of nuclear power in the electricity mix to 50%. If NGOs and alternative actors like the négaWatt association start to be integrated in policy consultation, the French energy system stayed subject to institutional inertia and resistance from incumbents like EDF. Therefore, no concrete measures are taken to reach the nuclear energy reduction objective (Andriosopoulos & Silvestre, 2017; Aykut & Evrard, 2017). As explained by an interviewee "there is not a strong will to go toward renewable energy in France. It has to be said. Then, nothing is done to make people's life easier. So it is very frustrating for people who are motivated because they feel like spokes are put in their wheels all the time, which is not entirely false". (FR-WP3-COOP-FIELD-2)

The minister of Industry today, you only have to look at her cabinet, it's full of X-mines who were trained to defend.... To go to the wall with nuclear power. (FR-WP3-COOP-FIELD-4)

The existence of alternative technical narratives may be key to help cooperatives framing their objectives

Regulative, normative and/ or cultural cognitive institutions

Scott (2014:56-57) defines institutions as comprising "regulative, normative and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life... Institutions are multifaceted, durable social structures, made up of symbolic elements, social activities, and material resources".

Regulative institutions refer to rules, laws, policies, standards that guide “action and perspectives by coercion or threat of legal sanction” (Hoffman 1999). The energy sector is highly regulated and in France, regulative institutions impede the development of REC by imposing a large-scale and centrally managed logic on small scale and decentrally managed projects.

Normative institutions refer to norms and values and “what is considered appropriate behaviour and can be directed at all actors of a particular field (Scott 2001)”. In the French energy sector it is the norms and values of technical elite stemming from like-minded engineering schools (Ecole des Mine, Ecole polytechnique (known as X)) that dominate. These norms and value are based on a productivist approach favouring centrally manage nuclear power. They impede the development of REC that fight for an energy system where citizens should also have a say in energy decisions.

Cultural cognitive institutions refer to shared conceptions of reality, binding expectations, common beliefs that frequently become routine ways of understanding the world. French energy sector is strongly influence by the technical narrative surrounding nuclear power as a reliable, affordable and clean source of energy, one where citizens are consumers of a service provided to and managed for them by others. To legitimate their existence, REC have to develop and engage actors around a counter technical narrative. This is especially challenging because prevailing cognitive institutions have excluded French citizens from energy decision for decades. Previous research argued that when people do not believe they can play a role in the electricity system, they show a very low level of involvement (Devine-Wright, 2007). REC have to find ways to overcome this lack of involvement and feeling of powerlessness.

Learning from European experiences

When renewable and especially wind farms started to be developed, citizens were sometimes consulted about the projects but were not given the chance to play a more active role. Citizens maybe even had difficulties imagining which role they could play in this very technical and highly regulated sector (Sebi and Vernay, 2020). Some interviewees explained that inspiration came from what was achieved in other European countries. An interviewee for instance explained: “before, in France, we talked a lot about concertation around wind farms... But to really involve citizens in the funding of local projects... the first time I heard about it, it was with WELFI. It was a revelation for me: elsewhere, for example in Denmark, things went differently” (FR-WP3-COOP-FIELD-1). WELFI (for Wind Energy Local Financing) was a European project meant to transfer in France (and other countries) the expertise of German and Danish practices regarding citizen investment in wind farms. The French coordinator of WELFI was Hespul, a non-profit association based in Lyon (Rhône-Alpes) specialised in small scale grid-connected PV (WELFI 2003). Hespul will later be one of the founders of the national network Energie Partagée.

Pioneers activists

In parallel, in the Brittany region, a group of friends and environmental activist decide to create a “cooperative wind farm” to promote renewable energy and energy savings, and develop activities linked to sustainable development by following “social and solidarity economy” principles (EPV 2003). The group creates the association that will become Energie citoyenne

en Pays de Vilaine (EPV) (see box below) and engage in grassroots work to mobilize local inhabitants and convince public authorities. The project relied on volunteer work, subsidies and a partnership with a consulting firm in charge of the feasibility study (EPV 2004). As the first of its kind in France, the project encountered multiple political and administrative obstacle and took eleven years to be completed. It has since been an exemplar for other projects in the same region and beyond. In 2011, Energie citoyenne en Pays de Vilaine created the first regional network meant to allow project leaders to exchange knowledge and provide support and training in order to facilitate the emergence of project (Taranis, 2020). The association also contributed to the creation of Energie Partagée.

Eoliennes en Pays de Vilaine

Eoliennes en Pays de Vilaine is an association created in 2003 to develop wind turbines in the Bretagne Region. Because it was the first in France, it took around 11 years to inaugurate the first wind farm in 2014. Founders mention the difficulty to obtain authorisations and find banks who would accept to fund the project; they ended asking loans to Belgian banks. The members also had to do some bricolage to go around the regulation forbidding to fundraise directly money from the public and created several investment clubs to gather citizen investors.

The territory now counts 3 wind farms. Each of these companies decide in their shareholders' agreement to dedicate an annual budget to fund demand management activities around energy (information, training, animation) through the Eoliennes en Pays de Vilaine association. Eoliennes en Pays de Vilaine is committed to a close relationship with inhabitant, listening and answering to their concerns about the powerplants. "Very early on, we create what is called a steering committee, in which we find a few people who carry the project and who are, during the development, a bit the referents, the people to contact in the village."

As a pioneer of citizen energy, Eoliennes en Pays de Vilaine participated to the creation of Energy Partagée in 2010 at the national level and created the corresponding regional networks in Bretagne and Pays de la Loire Regions. It also helps other wind and solar plants projects and participate to international knowledge exchange through the Interreg EU project ECCO.

Creation of the cooperative electricity supplier Enercoop

In 2005, when the electricity market started to be liberalised, Greenpeace France wanted to leave EDF for a green electricity supplier more aligned with its anti-nuclear stance. Finding the French offers rather limited and considering the examples of cooperatives created abroad in Germany (Greenpeace Energy) or Belgium, the NGO studied the opportunity to create a similar organisation in France. Together with others such as CLER (NGO for energy transition), HESPUL (association specialised in renewable energy and energy efficiency), Biocoop (cooperative organic food stores), La NEF (cooperative bank), La Compagnie du Vent (renewable energy development company), Greenpeace created Enercoop. The first basic principle of Enercoop were the multi-stakeholder cooperative statute (SCIC) and the provision of green electricity, with the

primary objective to provide an alternative to EDF for individual consumers (Becuwe et al., 2010). As will become clear in the next phases of this innovation history, Enercoop that presents itself as an “activist energy supplier” will play a central role in the development of REC in France. It is however important to realise that it was (and still is) a niche player. In 2019 for instance, it celebrated its 80,000 customers (Nabil Wakim 2019). In its narratives, Enercoop borrows a lot from discourses stemming from the food-retailing sector and more specifically from one of its founding members Biocoop. Enercoop for instance commonly refers to concepts borrowed from alternative food-retailing such as fair prices/trade, traceability, short supply chain. Even its name is an analogy to Biocoop.

Creation of Energie Partagée Investissement, an investment tool to raise crowd equity

In this phase, we find very few REC active and operational. One of the reasons was the difficulty to raise funds. As we have seen with the example of EPV (see box), finding money was so complicated that they had to turn to foreign banks to fund their project. These difficulties were true for wind but also for solar investment that were considered risky at the time. In 2005, the municipality of Chambéry (Rhône-Alpes) developed a 100KwC PV plant. Confronted to the funding issue and willing to involve citizens and SMEs, the city asked INDDIGO (a consulting company specialized in sustainable development) to create an investment fund to collect citizen investment. To create this fund, INDDIGO joined forces with the cooperative bank La Nef and Hespul, who were also among the actors who lobbied for feed-in tariffs for PV technology in France since the 1990's. Inspired by the model of Terre de Lien, a fund investing in organic farming, the fund named Solira is created in 2008 and started to invest in renewable energy project. In 2010, several citizen energy pioneers including Enercoop, EPV, la Nef, CLER... met and transformed the regional fund Solira into a national fund aimed at supporting citizen energy projects: Energie Partagée Investissement. EPI became an obligatory passage point for REC (Vernay and Sebi, 2020) and especially those that wanted to develop wind farms.

The development of the solar cluster model of Centrales Villageoises

Another intermediary was created in this phase that would strongly influence and inspire REC developing solar rooftop projects in France: the Centrales Villageoises.

Like other countries, REC in France are strongly dependent of the availability of attractive feed-in-tariffs (FIT) (Vernay and Sebi, 2020). Starting from 2006 with a peak in 2009, market conditions and FIT made PV projects highly profitable. As explained by an interviewee: “with high purchasing prices, there was a kind of speculative bubble around PV, private operators were soliciting a lot local authorities, including regional natural parks”. In France, Regional The ‘speculation’ on PV installation created local controversies around projects emerging without concertation, or competing with agricultural use of land (Fontaine, 2018). These controversies triggered the emergence of an alternative model.

Relying on previous experiments around PV technology and existing networks of actors, the regional agency Rhônalpénergie-Environnement started in 2010 a program to encourage and support local actors in the emergence PV project based on collective local dynamics and interests. The regional agency built partnerships with five Regional Natural Parks of the Rhône-Alpes region to create an alternative methods for developing PV plants. Natural Parks were natural partners because they have the mission to ensure a local economic and social development coherent with the preservation of natural, cultural and

landscape patrimony (PNR de France 2020). Eight experimental PV projects promoting landscape integration and citizen participation emerged through the EU programs ENERSCAPE and LEADER. Rhônalpénergie-Environnement took from the start a role of supporting actor, providing tools and methodologies to build collective action with elected officials and inhabitant, solve juridical and technical issues and discuss landscape integration of PV panels (Fontaine, 2018). After the realization of the first PV projects, other regions showed interest in replicating the idea. Rhônalpénergie-Environnement worked to conceptualise and formalise the model. A charter is written in 2015 based on the following principles: citizen participation, partnership with local authorities, respect of the environment and landscape patrimony, use of local resources, benefits for the territory and contribution to local development. The projects must also be developed in a coherent geographic area, have a democratic governance, aim for economic viability and professional quality, and participate in the Centrales Villageoises movement (Centrales Villageoises n.d.). In 2018, the association Centrales Villageoises is created to federate the projects. Each PV plant cooperative becoming a member of this association. Rhônalpénergie-Environnement has progressively transferred its skills and network animation activities to this new entity.

SIE changing social relations

In SONNET, we define a social innovation in energy (SIE) as a combination of ideas, objects and/or actions that changes social relations and involve new ways of doing, thinking and/or organising energy. In this report, we focus on renewable energy cooperative (REC) which refers to organisational models through which citizens jointly own means of and participate in renewable energy production. What is innovating about this type of SIE is that REC represent a novel way of doing energy, one where citizens are engaged in investment decision-making at the level of individual renewable energy production facilities. Moreover, recent development suggest that REC are considering broadening their scope in order not only to focus on production but also supply and consumption. In other words, they are considering changing social relations even deeper in the energy system by trying to make individual consumers a central actor at all levels of the value chain.

To conclude, this early phase is not so much an history of the emergence of RECs as organisations where citizens jointly owns mean of producing renewable energy. At the time the scarcity of projects can be explained by the fact that regulatory frameworks did not allows citizens and municipalities to jointly invest in a renewable energy projects. This phase however, shows how a small group of pioneers in the energy, food and banking sector joined forced to create the intermediaries that would later facilitate the emergence of REC. These pioneers are active in the social and solidarity economy and share a similar activist mind-set. These intermediaries provide support in the form of development blueprints and methods or an investment tool to raise crowd equity.

In figure 1, we show that the distribution of REC is heterogeneous across French territory. This phase gives first explanations why so many projects can be found in Brittany and Pays de la Loire (where EPV was created) and in AURA (where the

Centrales Villageoises was created). These specific regions are the seedbed of active networks of pioneers who worked to build alternative ways to develop and manage energy production.

Phase 2: A short boom in citizen renewable energy project (2015-2017)

A law that initiated a multiplication of projects:

2015 is a very important year for REC. The Energy Transition Law for Green Growth (Transition Énergétique pour la Croissance Verte,) adopted under a left-wing government created a window of opportunity for REC (Aykut & Evrard, 2017). It made it possible for citizens and local authorities to co-finance local renewable energy production projects (Peullemeulle & Duval, 2017). The TECV law allowed public authorities to take shares of private companies producing renewable energy and lifted some of the constraints imposed by the Financial Market Authority (AMF) on the raising of capital from the public (Poize, 2015). This LTECV facilitated the emergence of citizen project in the country (Sebi and Vernay, 2020). This law also gave visibility to citizen-led initiatives in the energy sector. As explained by one interviewee: “I would say it started with the 2015 TECV law which started a few things. It started parliamentary discussions and has also raised the awareness of some parliamentarians of the problem of citizen energy” (FR-WP3-COOP-FIELD-3). The LTECV created an advocacy opportunity for REC supporting actors such as Enercoop and Energie Partagée.

This combined with the availability of attractive FIT created opportunities for many new REC to be created all based on the same model: they collect equity from local actors (citizens, municipalities), use that money to (partly) finance a renewable energy power plant and sell their power to EDF. This was for instance the case for Buxia Énergies that emerged in November 2015.

In this period, we see REC developing different types of energies such as hydroelectricity, wind or solar farm biogas and biomass. However, it is small rooftop-solar projects that are the most often developed. The advantage of developing small projects is that citizens can develop their first projects without requiring a bank loan. Initiators explained that such projects were easier to manage and a good way to get started as it helped members gain trust by showing that they can do this with their own resources. Besides, a rooftop project does not require years of procedure to obtain necessary permits and volunteers can see the impact of their activity much faster. Many of the rooftop projects were initiated following the model developed by the Centrales Villageoises. It is also in this phase that the Centrales Villageoises started to export its model outside of the AURA region (Thou et al. 2018).

Introduction to Buxia Énergies

Buxia Énergies is a REC located in the Pays Voironnais, in the East of France. At its initiation, we find the municipality of la Buisse. The municipality was used to create commissions open to citizens to discuss and conduct projects. One entitled Agenda 21 had the ambition to realise a project linking notions of citizenship and sustainable energy. Members of the commission proposed to collectively realise a solar rooftop project – the idea was to start small but to start quick.

They contacted Hespul who put them in contact with an already existing REC in Ardèche. Representatives came present their project, ambitions and recommendations during a public hearing. In November 2015, a group of eight volunteers created Buxia Energie. Today Buxia Energies counts 280 associated members.

The objectives of Buxia Energie is the collective appropriation of electricity production by jointly imagining, building and financing local projects in renewable energies and energy savings (Buxia Energie, 2020). This REC has chosen the one person, one vote mode of governance. Becoming a member of Buxia Energie is open to anyone living in the Rhône-Alpes region and can be done by buying a minimum of one share worth 50 euros.

Rather quickly, the first group of volunteers managed to raise their first 12,500 euros. This was sufficient to finance the first solar rooftop project (9kWc) on the roof of the house of one of the local investors. This project was completed and connected to the grid about a year later, in January 2017. Shortly after, founders raised another 12,500 euros and could realise a project on the rooftop of a municipal building (9kWc as well) which started producing in March 2017. This meant that they could finance their first projects entirely based on crowd equity and without needing a bank loan. These projects were a way for volunteers to build credibility internally (convince volunteers that such projects were possible) and externally (show that a model where citizens were managing a renewable energy project could function).

Since its creation and following changes in policy schemes, Buxia Energie has conducted increasingly bigger projects. In September 2020, they had five 9 KWc and five 36 KWc operating projects, one solar thermal project. They are currently building two more plants (one of 36 KWc and one of 84 KWc) and are involved in five additional projects (between 36 and 500 KWc). To conduct these bigger projects, Buxia Energies cooperates with other actors including Enercoop AURA, Energie Partagée, the SMMAG (local syndicate responsible for public mobility in the area). Buxia Energie has currently sold 4589 shares accounting for almost 230,000 euros.

Buxia Energies is an example of a REC that successfully conducted various projects of increasing size and in various part of the area where they are operating. The main challenge for Buxia today is to attract new active members and, if possible, people with good communication skills and that could help gain visibility among large share of the population. Moreover, even though energy savings is part of their objective, Buxia Energie has not conducted a project on this topic yet. One of the reason is that energy efficiency projects do not have a clearly defined business model and are in this regard more difficult to set-up. Moreover, energy efficiency projects may require REC such as Buxia to imagine different business models from that which they rely on to develop renewable energy capacity. It is however one of the aspects where they think they should focus some attention in the years to come.

A diversity of projects based on different interpretations of what it means to involve citizens

Beyond the diversity in terms of the technologies REC used to produce energy, the law also created opportunities for diverse interpretation of what involving citizens could mean. We can identify three types of involvement introduced by different actors.

The first type of participation is financial participation (I.e. investing without being involved in the governance). The LTECV, introduced a so-called “participatory bonus” incentivising financial participation of local actors in renewable projects applying in call for tender procedure. It was meant to incentivise private developers to have citizens partly fund their projects. This was sometime a first step for private developers to work toward citizen involvement. In practice, this mostly created a windfall effect for private actors to collect citizen savings via crowdfunding platforms without granting them access to project governance or decision-making (Rüdinger, 2019). As explained by an interviewee, developers often agree to get citizen money but have more difficulties to include them in the governance. With this participatory bonus, the French government had accepted to give a role to citizens in the sector. However, there was a risk that this role would eventually be limited to helping to finance the energy transition without obtaining a say in energy decisions in return. The government and REC actor did not agree on what it means to involve citizens in renewable energy production.

The second type of participation is the notion of citizen project defended by Energie Partagée. According to its charter, a project can be qualified as “citizen” when there is a democratic and cooperative governance with a majority help by citizens, organizations grouping them, local authorities and/or the Energie Partagée fund; as well as limited profit distribution and ecological concern. To be part of the Energie Partagée network, projects has to go through some gatekeeping and be validated by employees of the network who assess their “citizen” orientation through an evaluation grid (still in development) based on their charter.



The third definition, promoted by the Centrales Villageoises association has even stricter criteria. A project can be qualified as “Centrale Villageoise” when there is a local anchorage and direct inhabitant involvement. In this sense they would not allow project led uniquely by a public actor to become members of their network, while Energie Partagée may accept it. Each cooperative has to correspond to a coherent geographic area allowing proximity with inhabitants. The cooperatives also has to apply model statutes and use the tools and the methodology of the “Centrale Villageoise” model. To become a “Centrale Villageoise”, the project has to be presented to an “engagement committee” composed of representatives of existing projects who validate the respect of the principles and the methods. The Centrales Villageoises is a trademark. As explained by an interviewee initiatives “cannot write “something Centrales Villageoises” and should not use the signature of Centrales because we are a trade mark, quite simply”

(Interview FR-SIEI-pre2). The Centrale Villageoise model is quite precise and some find it restrictive. For the Centrales Villageoises, their method is however a guarantee of quality since the model is tried and tested. As consequence, some projects are inspired by the model but do not join the network because they do not meet all the criteria. For example, a member of Buxia Energies explain “we are called Centrale Citoyenne because they are a bit jealous of their brand” (Interview FR-SIEI-pre3).

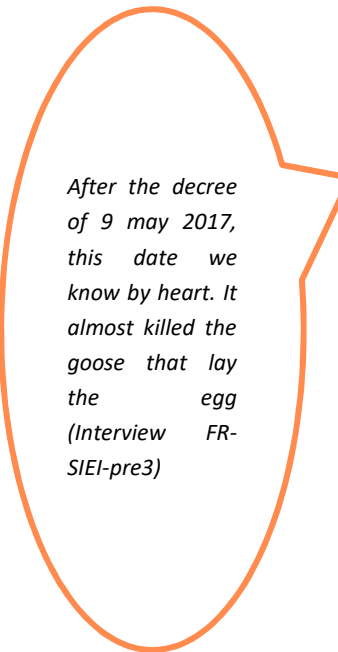
These three approaches or degree of citizen involvement led to debates about the definition of what can be qualified as “citizen” and where to put the thresholds to assess citizen participation. The Centrale villageoises and pioneering actors like EPV tend to defend stricter visions while Energie Partagée seems to favour more inclusive criteria. As will see in the next phase, defining criteria about what should be considered a “citizen” project and have the regulator accept these criteria is an important subject of contestation between REC actors and with actors outside as well.

Contestations and relations between actors

Our analysis of REC in France shows that there is some diversity in this SIE field: REC may conduct different types of renewable energy projects and have a mode of governance based on different principles. The analysis also reveals some recent and still ongoing contestation between SIE-actors around common principles regarding what it takes to be recognised as a SIE-initiative in this field. However, SIE-initiatives and SIE-actors clearly share similar objective to create possibilities for citizens to take part in local energy decision making. Similarly, this SIE field is characterised by very strong networks of like-minded actors: core actors are stemming from similar organisations; regional networks are often animated by regional core actors; core actors are almost obligatory passage points for SIE initiatives. Our observations suggest that this field may function as a rather closed network of actors. To benefit from the networks it is necessary for actors to join and be accepted by the network. The analysis also reveals ongoing contestation about the definition of the SIE between SIE-actors and other field actors. SIE-actors are actively trying to protect and have recognised by governmental instances a definition of the SIE which excludes initiatives where citizens only co-finance projects but do not have a say in their governance. Here field actors have a lot of work to convince of the added-value of their definition.

Make due with powerful historical actors

REC have a complex relationship with historical actors. First, similar to other countries, grid connection is a recurring subject of complaints (Sebi and Vernay, 2020). During a workshop we attended, the participants for instance congratulated themselves for not having complained about Enedis – the distribution system operator - during the entire meeting! Grid connection is a source of delays, can be very costly and compromise the economic feasibility of projects, especially in rural



After the decree of 9 May 2017, this date we know by heart. It almost killed the goose that lay the egg (Interview FR-SIEI-pre3)

areas where higher investments are often required. The delays may affect also the profitability of the projects as FIT are decreasing quickly every 3 months. Many SIE initiatives complain that grid connection costs are too expensive, that cost calculation is not transparent, and that procedures used to change “every 3 months” (Interview FR-SIEI-pre4). Even if Enedis is working hard on improving procedures, REC initiators asked for additional simplifications.

Second, REC have a love and hate relationship with EDF. As explained previously, to benefit from FIT, project owner have to sell their power to EDF. As explained in the website of one of the renewable energy cooperative: “EDF is our “mandatory” client”. If we recall that REC were created to give a role to citizens because EDF did not allow them to play one so far, having to sell your power to EDF can feel counter-intuitive. Energie Partagée (2017) for instance published an article where they explain that project they finance and more generally REC “must agree to sell their energy, often reluctantly, to EDF”. This also places REC in a position of dependency towards EDF and regulations prevent REC to build local supply chain for electricity in cooperation with entrepreneurial firms that have entered the market.

The vulnerable niche for REC projects

The LTECV created a niche for REC projects to develop. Besides, in 2016, and after years of lobbying by Enercoop and Energie Partagée, a decree authorized the cooperative Enercoop to buy electricity through FIT contracts. It is important however to realise that the government put a number of constraints. Enercoop could only buy a maximum of 75 contracts for 100MW. Moreover, projects leaders have to pay a fee to EDF if they when want to end their contract and switch to Enercoop. As explained by an interviewee: “EDF ask for a tax because the Purchase Obligation contract was ended prematurely and the more we worked with them, the heavier this tax is, which is completely paradoxical” (Interview FR-SIEI-pre3). Despite this limitation, the unlocking of this mechanism allowed initiating a value chain where cooperative actors work with each other. For REC, selling their electricity to Enercoop was a way to close the loop and have one more step in the value chain in the hand of a likeminded organisation.

This booming phase was short lived. A decree published in 2017 changed the tariffs for small 9Kw PV projects on which many cooperative relied especially to realise their first project. These projects stopped to be profitable and REC had to reorient towards projects of a minimum of 36Kw (Vernay & Sebi, 2020). The argument from the government was that public money should be efficiently used to help finance the energy transition. This idea behind this is that bigger projects make more sense economically because they benefit from economies of scale. Actors in the movement also see in the electricity field the influence of EDF that has the power to make the regulation evolve toward the conservation of the actual energy system. This is illustrated by the following quote: “the big actors have some... you can see it just in human resources, but also in financial means they put in the [lobbying] activity. It is disproportionate compared with an actor like Enercoop. [...]I don’t want to fall into conspiracy theory, but there is still a more sympathetic ear from the administration to EDF”. (FR-WP3-COOP-FIELD-3)

This policy change raised the barriers for REC, and especially for those that tried to realise their first project and often start with small installations. As explained by a network animator from Energie Partagée, the fundraising and the geographical scale in which the project has to take place are more important.

'Outside' institutional environment shaping the development of the SIE-field

When talking about the SIE-field of REC, we refer to the space composed of SIE-initiatives (local manifestation of REC such as Buxia Energies or EPV), SIE-actors (individuals, organisations or collective that actively work on SIE such as Energie Partagée or Centrales Villageoises) and SIE-field actors (individuals, organisations or collective that are part of the field and may enable (e.g. ADEME) or impede (e.g. EDF) the SIE). In this space, actors take one another in consideration and have a shared understanding of what the SIE is (even though it may not be consensual) and of their relation to other actors. In the SIE-field, actors also follow similar formal and informal institutions. The SIE-field institutional environment is embedded in a larger encompassing institutional environment. This is what we refer to when talking about the 'outside' institutional environment.

The 'outside' institutional environment of REC had shaped the development of this field in various ways. First, SIE-actors position themselves in opposition to actors in the 'outside' institutional environment: REC field represents an alternative to prevailing energy field in France – they propose alternative normative and cultural cognitive institutions (see more details in the box on regulative, normative and cultural cognitive institutions). Second, the 'outside' institutional environment shapes the regulation institutions prevailing in the REC institutional field. Regulations are inspired by the logic present in regulations pertaining to the energy sector as a whole. Moreover, regulations are always about finding a trade-off between giving some space for the REC SIE-field to develop without risking compromising the interest of actors in the prevailing energy field.

Policy changes have made territories more unequal: those with supporting organisations and/or already existing REC being more capable of continuing developing new projects.

Phase 3: 2017- today: public recognition and scaling dilemmas

On the challenge of keeping the initiative active

After REC have completed their first project, comes the question of whether to stop there or move on to another project. Many chose the second option and are faced with the challenge of finding more appealing ways to communicate about what they do in order to find new investors and possibly new volunteers as well. At Buxia Energies for instance the strong reliance on a small group of volunteers is seen as a key challenge to overcome and sustain the REC over time. This is illustrated by the following quote: "Clearly we are facing a problem with the number of volunteers. In my opinion more than any other subject it is our Achilles heel (FR-WP3-COOP-SIE 2)". If French REC have difficulties finding attractive ways to communicate about what they do, this may be because France has an electricity mix that is 92 % decarbonised (owning a very high share of nuclear and hydro power). For this reason, it is very complicated for actors in the field to mobilize people around a common fight against climate change (see for instance Kalkbrenner & Roosen, 2016; Vernay & Sebi, 2020). It is complicated for French cooperatives to argue that by developing renewable energy production capacity they contribute to fighting climate change. We observed that even though many actors in the field are known for their anti-

nuclear position, they do not communicate much about that and prefer leaving door open for people who support renewables and are not against nuclear. Instead French REC have to find other ways to communicate about what they do and why. This may explain why French REC focus their communication on other notions such as access to governance and decision making and having a positive impact on the local economy.

Moreover, REC are unequal in their capacity to find new investors. When they are located in an area where inhabitants are wealthy, collecting citizens saving is not difficult. However, for projects in more rural areas this may be more problematic. Besides, small projects are hardly able to make returns on investments and many renewable energy cooperatives conducting these types of projects are unable or unwilling to propose attractive returns on investment. REC in France mostly offer citizens the possibility to place part of their savings in a project that makes sense for them even though it may not be attractive financially and this may limit the pool of people whom they are able to mobilize. As explained by an interviewee: “in other European countries, REC manage to link energy production with issues of self-consumption or energy supplies in the region. In France we do not do that and as a result French cooperatives do not inspire in the same way (Interview FR-SIEI-pre5)”.

On the challenge of confronting volunteers and professionals

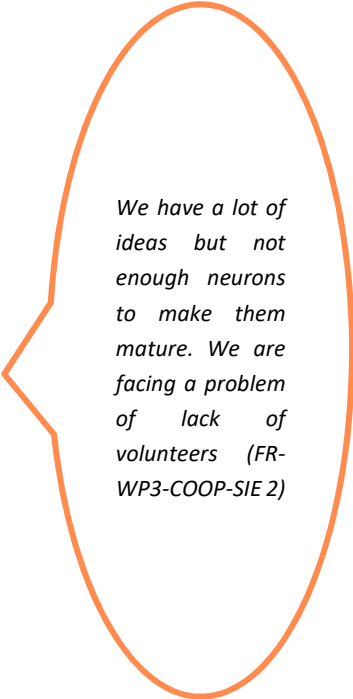
REC rely on volunteers to perform their daily activity. Interviews revealed that interaction between volunteers and professional from the city administration is not always easy. Volunteers are sometimes perceived as a happy band of amateurs that are not well aware of rules, procedures and administrative constraints. Besides, it is sometimes difficult for volunteers to organise meetings during office hours and this can further complicate the interaction. Here city administration has an important role to play. Making the rooftop of public building available and identifying a contact person for REC in the city can be a way to show the city's engagement.

Scaling strategy – doing bigger projects

Scaling can take different forms. We refer to developing bigger projects of a similar nature as scaling up (Lyon and Fernandez, 2012). Scaling up has become an important topic for REC because, as aforementioned, changes in FIT forces REC to develop projects with bigger installed capacity (moving from 9wkc to 36 kwC). Moreover, there are uncertainties regarding how policies will evolve. The call for tenders (which REC do not have the capacity to respond to alone because they are too complex and too risky) may become mandatory for projects above 250 KwC (instead of 100 KwC now). This could be favourable to citizen projects willing to scale the size of their projects. However, as a cooperative member note, this could also put them in competition with bigger actors. Globally, there are ongoing changes in the regulation and

impacts are uncertain. There is however a clear trend towards developing increasingly bigger projects. Before 2017, it was possible for REC to develop their first project on their own simply by collecting crowd equity (without requiring a bank loan). At Buxia Energies for instance “the first two power plants were financed in equity because it was difficult to convince the banks. We started with relatively simple projects with small power plants, budgets, etc” (Interview FR-SIEI-pre3). Having to develop larger project may feel overwhelming for citizens because they are longer to set up, financially risky and cannot rely on volunteer work only. As explained by an interviewee: “there is a very strong psychological aspect in citizen initiatives that makes them think that projects of a certain size are outside their scope” (Interview FR-SIEI-pre5). Moreover, behind the need to develop bigger projects also lies the need to rethink how these projects can be realised and with whom. Buxia Energies for instance cooperates with Enercoop for the development of a solar park of 500 kwc on top of a parking shade. The shift towards bigger project makes REC more dependent on the existence of local supporting organisations that can help them get started. These may either be intermediaries such as a regional network animator and/or already existing REC that project initiators can join. Buxia Energies for instance started around a few citizens living in the city of La Buisse and was later joined by people interested in developing project in neighbouring municipalities. Linked to that, we observed that dynamic around the creation and growth of REC seems dependent on the existence of regional support that grant additional resources to initiatives (Sebi and Vernay, 2020). This support can take the form of subsidies for network animation and knowledge sharing, for feasibility studies, for investment or through calls for projects.

These reflections regarding with whom to cooperate to develop large renewable energy production capacities are also very present among the intermediaries. Enercoop has developed an internal evaluation tool based on ethics criteria to decide with who they agree to work to develop RE project and from who they accept to buy electricity. Similarly, Energie Partagée initiated at the national level a working group with private developers to define what kind of partnership could be established with citizen projects and define common “co-development” principles. These principles would define under which conditions “citizen” projects can ally with private (for-profit) actors to develop renewable energy projects. Energie Partagée’s strategy is to try to experiment with developers in the hope to change progressively their practices toward more inclusion of citizens in the governance of RE projects.



We have a lot of ideas but not enough neurons to make them mature. We are facing a problem of lack of volunteers (FR-WP3-COOP-SIE 2)

Policies and policy making

The analysis highlights that policies are a key enabling or impeding element in the emergence and development of REC: they shape the type and the tempo at which projects are realised. In the French case, European policies have played a major enabling role in pushing French government to design policy instruments that provide some support to REC.

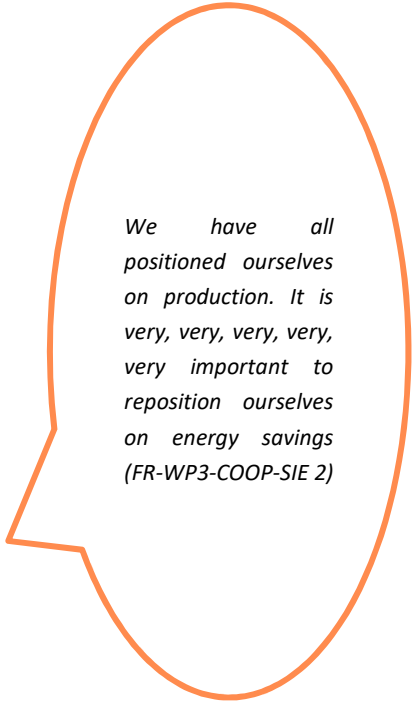
At the national level, policies have been very unstable switching between short phases where REC have been strongly supported to phases where new constraints have been implemented slowing down the development of the movement. Policy instruments targeting REC take their inspiration in instruments developed to support large-scale renewable energy projects. This is impeding for the development of the field as small-scale projects where volunteers play a central role do not have the required level of expertise and risk-taking capability. This large-scale focus suggests difficulties faced by REC to have their needs acknowledged by policy makers.

The analysis also reveals that REC strongly depend on regional support schemes to emerge and fasten the pace at which they can develop.

Scaling strategy – diversifying activities.

Successful REC also often consider scaling by diversifying their activities in order to broaden their impact on the energy transition. We refer to this as scaling out (André & Pache, 2016; Bauwens et. al, 2020). Scaling out may also be a way to attract different profiles of people. As explained by one interviewee: “it's a bit vicious, we put "energy production" on the table, so we attract men who are either technical or like managing projects. We have much less women. If we had done projects on "Energy Savings", we wouldn't necessarily have the same population in our associates” (Interview FR-SIEI-pre1).

When asked about future potential developments for the REC, the president of Buxia argued in favour of two forms of diversification. First, it makes sense to diversify the type of renewable energy that is developed. He for instance explained: “if we want to go all the way with citizen power plants, i.e., to be able to have local and resilient energy, we must also diversify our sources”. Second, developing activities that foster energy efficiency and energy sufficiency is another priority. This could be done by investing in renovation measures for instance. This is however more complicated to do. While the business model for producing electricity is well known, it is not yet clear whether there could be a business model for energy efficiency projects and it may be required for REC to experiment with business models that are different from the one they are used to when developing and financing renewable energy capacity.



We have all positioned ourselves on production. It is very, very, very, very, very important to reposition ourselves on energy savings (FR-WP3-COOP-SIE 2)

Vis-à-vis the public or public partners, we need to show: a citizen project is that and it weighs that much. (FR-WP3-COOP-FIELD-2)

Building legitimacy –using numbers strategically

REC and their supporting actors have done extensive work in order to convince about their legitimacy and their potential contribution to the energy transition. To do so, they use numbers very strategically to signify the importance of REC. Since 2019, Energie Partagée aggregates the data of all citizen projects to demonstrate their financial and energy weight. The association also worked to theorize the positive effects of citizen projects through a dedicated economic research project concluding that “for 1€ invested, 2,5€ benefit the territory” (Energie Partagée 2019). These results were presented at the first national conference on renewable energies for citizens organised by ADEME in December 2019. This was an important event that created opportunities for actors to show their legitimacy is recognised by national institutions. In the webpage presenting the event ADEME for instance states that REC are an “emerging mode of governance, essential for the energy and solidarity transition by and for the territories” (ADEME 2019).

A closed niche?

Ongoing discussions about the type of cooperation that REC should develop brings forward an interesting paradox. On the one hand, REC stress that their projects can create leverage for local SMEs to develop or at least maintain their activities. On the other hand, REC actors (or at least some of them) seem to have a problematic relation with private actors. We base this statement on various observations. For instance when talking about the ROI of the investment in the initiative, a member of REC explained: “it is clear that they do not do that for the money. If we remunerate 1, 1.5 or max 2%. We do not know. It is the GA that will decide. But anyway, we do not do that for the bucks” (Interview FR-SIEI-pre6). Behind this statement is the idea that there may be something wrong in “doing it for the bucks”. Moreover, during one of our participant observations, we heard one founder explaining that if he is client of Enercoop it is because they are an activist energy supplier. This activist culture seems very present among the member base of REC and can lead to an ethical dilemma, especially when their value are in total opposition with the ones of private companies. Finally, these impressions were also confirmed in an interview with a small project developer that has a long history of doing projects with citizens. He explains: “It pisses me off that they - referring to Enercoop and Energie Partagée - see themselves as the only ones who can do that (projects with citizens). When they weren't even born we were already thinking about it. They have a trust issue or a philosophical problem with the private sector. Because they are an association or because they are cooperative, they are on top of the ethical ladder because I am only a limited liability company. They cannot say it is necessary to strengthen the fabric of local SMEs if they do not help to strengthen it. Besides, if they don't bring me business, I'm going to die” (FR-WP3-COOP-FIELD-4). He further explains that one way to help would be for these actors to give visibility to project developers that are closest to their own ideals.

At the same time, REC actors are conscious that there is a tendency in the market towards concentration as small renewable energy developers are purchased by big companies. This makes it even more difficult to find partners with value similar to their own. As mentioned above, Enercoop and Energie Partagée are developing ethical criteria to select partners and the define the right way to work with people who do not initially share their values. However, they do not seems to have a specific strategy regarding small companies. The small developer we interviewed even felt they were developing tools competing with his activity, such as Energie Partagée Etudes which offers to fund the risky development phase of the

There was developers with human size with whom we could get along, but they were purchased and it becomes more difficult to work together. (FR-WP3-COOP-SIE-4)

projects before construction (see Energie Partagée 2020).

Power and power relations (power to + power over + power with)

The innovation history of REC is very much a story of power. The very essence of this SIE is to question who should have power in energy decision making in France and to ask that some of this power should be given to citizens. This is a difficult task in a system where power is held by a coherent set of historical incumbents actors, such as EDF, that have the power to make regulations evolve toward the conservation of the prevailing energy system. REC tend to compare themselves to large established actors for/by whom the system is designed and that indirectly exert power onto them.

The analysis also shows that there are ongoing power relations between SIE-actors. The ADEME by choosing one head temporarily gave power to one actor to support the development of REC in France. However, this was also done at the expense of the other SIE-actors that were not offered this possibility. This has pushed SIE-actors to reflect on how they can best cooperate with one another recognising that they will be able to exert more power if they do it together – as one voice.

Finally, the analysis also reveals that SIE-actors have themselves the capacity to exert power over other actors. They do this via their gatekeeping strategy, which gives them the power to include but also exclude SIE-initiatives from the field. Moreover, as the example of the project develop illustrate, they may also have the power to shape ongoing market dynamics if they would use their power to advocate and give visibility to actors that are closest to their own ideals.

Collectively defining what can be considered a REC

Gaining legitimacy however also meant accepting that the movement should be represented by one single head. Energie Partagée has been chosen by ADEME (a national government agency) and receives financial support to take on this role. As explained by a representative of Centrales Villageoises, “the problem is that ADEME, at the national level, needed a single head; because they did not want to give lots of small sums to many organisations. So, they chose an association that had a national scope” (Interview FR-SIEI-pre2). This forced the Centrales Villageoises to converge with Energie Partagée if they wanted to receive also some of the subsidies. As explained previously Energie Partagée and Centrales Villageoises do not have the same definition of what a REC is or should be. This push towards having a single head forced supporting actors to discuss with one another in order to find possible common grounds.

As explained in phase 2, Centrales Villageoises rely on a model in which there is one legal structure for each project, with a coherent small territorial unit and a direct implication of inhabitant in the governance. Energie Partagée adopts a broader

definition including indirect forms of citizen participation. As explained by an interviewee, “well, this was a point of debate we had with the Centrales Villageoises because they imposed indeed one company per cluster project and with a direct implication of citizens. Us, we believe that... well thus, it would limit the diversity of the models we could support.” (Energie Partagée Employee FR-WP3-COOP-FIELD-2). For Energie Partagée, citizens can also be part of the governance of a project if they are indirectly represented by an umbrella structure such as Energy Partagée investment fund, Enercoop, or smaller citizen organization taking equity shares in RE projects. After long discussions, Energie Partagée and the Centrales Villageoises formalized a partnership in 2019 (Energie Partagée and Association des Centrales Villageoises 2019). The Centrales Villageoises became a member of Energie Partagée association but kept their model as a specific form of citizen project. In 2020, the two organizations are still negotiating the conditions of their partnership, for example the condition for sharing their tools and knowledge or allow ‘double membership’ in both networks with a single membership fee.

Key changes over time

Based on the descriptive historical provided, we can come back to two key changes that influenced the emergence and development of the SIE-field.

First, policy changes have clearly influenced the emergence and development of REC. especially policy change forcing REC to scale up is having a strong influence because it pushes REC to rethink their *raison d’être*, what makes their initiative innovative and different. Linked to that, it also pushes them to rethink what their business model is and namely how they deliver value (through which type of partnership) and what kind of value they should deliver (through which type of activities).

Second, the first national conference on renewable energies for citizens organised by ADEME can be seen as an important field event. It has not changed the outside institutional environment yet. However, it can have a role in unsettling it for two reasons. First, because it provides external legitimacy to REC. Even though ADEME has long supported the movement, it was the first time that ADEME really communicated about it. Second, by further facilitating networking and exchanges between actors, it may also make it easier for newcomers to take action.

Advocacy of REC and of their detractors

Beyond agreeing with one another about what REC are, the field also pushes for external recognition of the importance of giving citizens a role in the governance of projects. As explained before, the government encourages citizen participation in renewable energy projects. However, it does not make a difference between “participatory projects” that are facilitated by crowdfunding platforms that collect citizen’s money and “citizen” projects that provide access to the governance

(Ruddinger, 2019). ADEME for instance is funding Energie Partagée to animate networks of both “citizen” and “participatory” projects. As explained by an interviewee: “that is where Énergie partagée sometimes has a difficult role because the association is supported by ADEME to promote citizens AND participatory projects... And... Whereas our charter... it is rather citizen projects” (FR-WP3-COOP-FIELD-2).

To advocate for better recognition and support for “citizen” projects, Enercoop and Energie Partagée gather with other actors stemming from the field of environmental protection, energy and the social and solidarity economy under a joint organisation called “Collective for Citizen Energy”. They created very detailed propositions for example to integrate citizen energy in policy targets, citizen bonus in FIT and call for tender... (Collectif pour l'énergie citoyenne, 2020a).

Despite this collective dynamics, the REC actors seem to have limited success in influencing national public policies. For example, the national low-carbon strategy published in 2020 consider citizens involvement only through the lenses of sensitization and responsible consumption (Ministère de la transition écologique et solidaire 2020). The latest program of energy published in 2019 mentions the importance to “support the development of participatory investment in citizen’s and local authorities’ projects” (Ministère de la transition écologique et solidaire 2019). However, it does not dedicate a specific part to citizen energy.

In the coming years however, the transposition of EU directives on community energy (EU 2019) may create an opportunity to change public policies. The Directive on community energy provide two definitions that we summarized below:

- ‘Renewable Energy Community’ is a legal entity effectively controlled by shareholders/members who are natural persons, SMEs or local authority located in proximity of the RE project. Its purpose is primary social, economic or environmental rather than financial profit.
- ‘Citizen Energy Community’; is a legal entity effectively controlled by shareholders/members who are natural persons, SMEs or local authority, whose purpose is primary social, economic or environmental rather than financial profit and may engage in a broad diversity of energy activity.

The directive also creates the obligation to evaluate and remove obstacles faced by community energy, and to integrate these organisations in national energy and climate plan. In France, The transposition work is still in progress since the second definition about ‘Citizen Energy Community’ has not been given yet. It is thus too soon to evaluate the impact of the directive on the French REC field. However, it seems to help moving the boundaries of public policies. The “participative bonus” (valuing financial participation of citizens) in call for tender is currently reformed and discussions may lead to transform it into a “citizen bonus” (valuing participation of citizen in the governance) as wished for by Energie Partagée.

There was no deliberate and concerted reflection, especially with the actors of the sector (FR-WP3-COOP-FIELD-3

Institutional work conducted by SIE-field actors and other field-actors

Institutional work refers to activities of field actor that aim to created, maintain or transform institutions. We have observed that institutional work is done simultaneously by REC actors and by field actors (e.g. incumbent actors) with opposite aims. On the one hand, REC actors have conduct institutional work in order to advocate for the creation of new regulative institutions that would provide them a protected space to operate. They have also worked on changing normative institutions by showing that another way to organise electricity was possible, one where citizens would be placed at the core of the system. Moreover, they also conducted institutional work to change cognitive institutions by creating a counter technical narrative – one based on citizen owned renewable energy – and used numbers strategically to convince of the legitimacy of this narrative.

One the other hand, incumbent actors have also done institutional work. However, they did so to maintain prevailing regulative institutions or see to it that regulatory institutions that had been created (e.g. the law adopted in 2015 and that led to a growth of REC initiatives) be transformed to slow down the growth of the REC movement. Moreover, they also tried to delegitimise the cognitive institutions that REC were trying to create by framing REC in very negative terms (e.g. as communitarian projects instead of project by communities).

The speed of development of REC is a reflexion of whether REC are able to be heard and create windows of opportunities for themselves or whether their voices is silenced by the much louder one of incumbent actors.

6 Summary, synthesis and conclusions

6.1 How do SIEs and SIE-fields emerge, develop and institutionalise over time?

In this report, we analysed the emergence and growth of one form of SIE, renewable energy cooperatives (REC) in France. French REC aim at enacting renewable energy transition, give back power to citizens in energy decisions, and benefit local territory. REC have become a means to allow citizens to have a say in the governance of local renewable energy production facilities by investing in these projects. Most initiatives focus on developing solar and wind power plants within cooperative organisation, even though they are considering broadening their scope to include activities that go beyond the production of renewable energy.

REC face numerous administrative and financial constraints. The French context was a priori unfavourable to REC.

Historically, the French energy system is centralised and based on nuclear energy. A system strongly defended by a cohesive technocratic elite. The elaboration of an alternative technical narrative of energy transition based on 100% renewable energy by the association Negawatt in 2003 and the liberalisation of the electricity market around 2005 created the opportunity to imagine a new model to organize the energy system. Several initiatives emerged in parallel to create the first French RECs. These initiatives originated from militant citizens, NGOs or para-public organisations and emerged from the will to create alternatives to nuclear energy or to private, for-profit, appropriation of renewable resources. EU programs played a role to fund pioneering actions or knowledge exchange with other countries that were more advanced regarding REC development.

In 2015, the Energy Transition Law for Green Growth created a more favourable context resulting in an acceleration of the projects and scaling through replication, especially small PV projects. The field developed around intermediary organisations stemming from pioneer's organization who formed networks to help new projects. In this period, different actors has different definition of how citizens should be involved in energy production. Public policies focus on 'participatory' projects and considered only financial participation. The network Energie Partagée defend the notion of 'citizen' project with an emphasis on participation of citizens in the governance of the projects (direct or indirect membership) while the Centrales Villageoise network use a stricter definition valuing direct participation of local inhabitants in the project governance.

In 2017, fed-in tariffs for small PV project became less attractive and forced REC to move toward bigger projects. The emergence of projects became a bit more challenging. More generally, REC having realized their first plant question themselves about whether and how they should scale up. While regulation pushed for bigger installation, some REC decided to follow this movement. The risk and complexity of such projects pushed small REC to work with more professionalised cooperatives like Enercoop, or to build partnerships out of their known networks. Other REC reflect on diversification toward different energy technologies, energy efficiency or energy savings.

In the meantime, the network actor Energie Partagée conducted some advocacy work to get its model recognized. In 2019, Energie Partagée and the REC movement were officially recognized in an event organized by the national agency ADEME that allowed the actors to get a new legitimacy vis-à-vis big public funds. This recognition came however with the constraint to name a single head to represent the movement and receive ADEME fundings. This incentivized the two networks Energie Partagée and Centrales Villageoise to work together in order to converge towards a collectively agreed definition of the field and of what constituted a "citizen" project. This recognition does not yet translate into ambitious public policies in favour of REC. Energie Partagée and Enercoop advocacy did not impact direct national energy strategies but may influence it indirectly through the transposition of the EU directive on community energy which create the opportunity to build new policies for REC.

6.2 How do SIE-field-actors and other field-actors interact with the 'outside' institutional environment and thereby co-shape the SIE-field over time?

The electricity system is highly regulated. The way the SIE-field looks like and how it evolves over time strongly depends on how SIE-actors interact with the 'outside' institutional environment. French institutions and technical systems are centralized around historical incumbent actors and nuclear energy. In France, regulatory, normative and cultural cognitive prevailing in the 'outside' institutional environment are favouring large-scale and centrally organised projects. This is clearly an obstacle for REC that instead strive for energy systems that would be "by and for the territories" (ADEME, 2019). SIE-actors have spent the last years advocating for the creation of regulatory frameworks that would provide them a protected space in which to operate. They have advocated for the creation of new institutions that would make it possible for the field to emerge as an alternative to the prevailing system. However, established actors have used their power to maintain existing institutions and make sure that if a space is given to alternative project such as REC it should not be at the expense of their own position and power. As a result, until today the SIE-field represents an alternative in that it did not transform the outside institutional environment but developed as a small independent niche.

Despite an unfavourable national context, REC obtained the support of other political actors such as local governments, public agencies and EU that helped them unsettling the 'outside' institutional environment and creating space for REC to develop. While there is in France a cooperative history, there is a weak localism tradition. However, local authorities (re)gained recently the competence to intervene in energy domains. The French REC movement thus benefited from the support of local authorities (regions and cities), as well as public agencies favourable to their model (ADEME, AURAEE). The relationship with regions and local authorities are a key development factors for citizen energy projects: regional policies were key to structure regional dynamic while local energy policies may have favoured the replication of pioneer's initiatives (Thou et al., 2018).

Finally, we posit that the hyper-centralised nature of the electricity system in France forced actors in the field to very clearly differentiate themselves, who they are and who they are not. REC field-actors have gone through a lot of effort to establish clear boundaries for their field by listing key principles translated in charters and evaluation tools used to ensure gatekeeping and validate who can or cannot be a "citizen energy project". They are also actively trying to have their definition of what makes a citizen project be recognized by the 'outside' institutional environment.

6.3 What are the enabling and impeding factors for SIE-field-actors and other field-actors to conduct institutional work and change the 'outside' institutional environment?

The weight of historical incumbents is a clear impeding factor for energy cooperative. The public discourses on nuclear energy as a low-carbon energy source makes it difficult for energy cooperatives to advocate for their initiative on the ground of a climate-change fight. Incumbents like EDF have important resources to lobby and have a historically close relationship with the government. At the national level, Energy cooperatives are thus focusing much more on other

notions such as access to governance and decision making and having a positive impact on the local economy rather than climate change.

It is also difficult for citizen projects to make the regulation evolve to their benefits because regulations are conceived by actors stemming from the well-established centralized model. These actors are rather sceptical about the very idea of decentralizing electricity production. SIE field actors consider that the renewable energy policies in general does not create a very favourable context for the development of cooperative model for energy production. Besides, the administrative environment is especially complicated to manage for small volunteer projects and tends to become more complex. Administrative constraints, but also economic changes in FIT pushes energy cooperatives to grow and change business models. Finally, current policies make it difficult for cooperative model for renewable energy to move beyond using citizen savings to produce and sell renewable electricity to EDF. As such and even though there is a growing interest from consumers to consume locally (not only for food but also for energy), cooperatives are limited in the scope of action, relying largely on volunteer work and left with a very small bargaining power against large established incumbent actors. SIE initiatives also face impeding factors that are internal to their own organisation. Because they are volunteer base, what they are able to do depends on how many volunteers they manage to attract. And similar to any volunteer-based organisation, keeping existing volunteers and finding new ones is difficult. REC have difficulties communicating about what they do to a broad public in attractive ways and attract people beyond environmental or social activists.

Despite these limitations, the REC field does benefit from a number of enabling factors that explain the capacity of the field to institutionalise. First, the movement benefits from the support of two national organisations – Energie Partagée and Enercoop. Their professionalised nature allows them to develop advocacy activities that smaller volunteer organisations could not do. Moreover, these organisations strategically use numbers to calculate their impact, theorize their activity and legitimate their model. They are the voices of the movement with the government and can raise concerns and try to protect and nurture the movement.

Moreover, the ecosystem of actors that can provide support locally has also gained maturity (with some regional disparities however). REC networks are present throughout the country. They provide tools and training to emerging projects and local authorities to facilitate the diffusion of the model. Besides, successful local initiatives such as the ones presented in more detail in this study, have shown that are able to create a momentum locally.

Furthermore, the analysis conducted in this study shows that SIE-actors have also gained some power to influence other actors. They sometimes manage to co-construct or influence local policies. Moreover, they are becoming interesting partners for other organisations such as project developers to work with. Through their gatekeeping process they have the power to create (or not) market opportunities for others. It is now up to them to decide whether they want to use this power to let other actors enter the field and under which conditions.

Finally, the field can also benefit from support of neighbouring fields such as ecologist NGO and social and solidarity economy. The influence of EU policies were also key to open the possibility for REC to exist through the liberalization of the energy market and specific funded programs. Moreover, EU networks appears to be especially important because national policies in favour of community energy seems to be mainly the result of previous European lobbying activities in cooperation

with other actors such as REScoop.eu.

7 Recommendations for our city partners, national and EU policy makers and SIE practitioners

SONNET city partners

- Cities can facilitate cooperative models for renewable energy by co-financing (equity) or co-developing renewable energy projects.
- Cities can support cooperative models for renewable energy by facilitating the cooperation between the volunteers that compose REC and professionals working for the local authority. This can be done by providing roofs where REC can initiate projects and/or by identifying a main contact person within the city for REC.
- Cities can also indirectly support the development of REC by developing complementary assets that facilitate their activities. Tools that help identifying rooftops that may be suitable for rooftop solar project may be such an example.
- Beyond producing electricity, cooperative energy models can also play a role by sensitizing people about the energy transition and the role they can play in it. As such, cities should take the opportunity to also cooperate with cooperatives on broader issues such as energy literacy or energy efficiency.

National and EU policy makers

- Access to FIT should not be a monopoly but instead be open to any type of supplier without heavy administrative procedure. This would increase the bargaining power of small renewable energy producers.
- Policymakers should also consider cooperative models for renewable energy as a powerful tool to sensitize people about the importance of the energy transition and enabling them to become active contributors to the transition. To recognize this plural role in support scheme one could also imagine providing specific FIT for production projects that have clear pedagogical objectives. To limit the cost of such a measure, one could limit the access to this specific FIT to 3-4 projects per municipality and reserve it to energy communities when they will be defined in the law.

SIE-field-actors

- A key challenge for REC in France is to attract new volunteers and new investors. To overcome this challenge, REC and their supporting organisations should look for ways to communicate more attractively about what they do and why.
- REC have focused on mobilising citizens for the energy transition via the development renewable energy production facilities. They could consider diversifying their activities to include for instance energy efficiency. This way they would broaden their impact on the energy transition and this may also help attracting more diverse

profiles, namely people with non-technical expertise. This may however require from REC to experiment with business models that are fundamentally different from the one they rely on to develop renewable energy projects.

- REC in France have emerged and are developing as a small self-centred independent niche. REC networks has focused on creating an institutional space for REC to propose an alternative to the current energy system. If REC want their alternative contribute to transforming the 'outside' institutional environment, they will have to move away from the niche they are currently in. This will mean accepting to work with established actors but also finding ways to convince established actors to cooperate with them. We encourage actors to continue discussing with the private sector in order to find ways to cooperate that are beneficial for both sides.
- REC have gained power and recognition. To capitalise on this they should use their power to help private organisations (project developers, consultancies, etc.) that have values which are close to their own so that the ecosystem of REC can diversify and grow at a faster pace instead of trying to internalise everything. They could for instance give these organisations visibility by imaging a label rewarding ethical business conduct.

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9 Annex 1

Methodology

Nine interviews were conducted. The interviews were conducted online via videoconference software or by phone. We selected initiatives in order to represent the organizational (Enercoop, Centrales Villageoises, Energie Partagée) and geographical diversity of the field (Bretagne, Est, Rhône-Alpes), but given the small number of interviewees, the sample is not representative of the whole diversity of the projects. For example, there was no biomass project. To better understand the interactions with the outside institutional environment, additional interviews with actors external to the field might also be needed.

Interviews were complemented with empirical knowledge and data gained through previous research projects (Carine Sebi & Anne-Lorène Vernay, Forthcoming; Vernay & Sebi, 2020). With consent of the interview partners, the interviews were recorded and extensive notes were taken during the exchanges. Due to lack of time, only 4 interviews were completely transcribed. Interview transcripts or notes were coded along with documents using the coding software Atlas.TI. We used deductive list of code defined by the research team. These codes were then refined into more precise items. Key events were listed and organized in a timeline.

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List of interviewees

Code interview	Empirical description of case	Actor type	Role	Date	Duration	Interviewer
FR-WP3-COOP-FIELD-1	Energie Partagée	Field Actor	Employee (Network facilitator)	16-07-2020	1h25	Adélie Ranville
FR-WP3-COOP-FIELD-2	Energie Partagée	Field Actor	Employee (Finance Department)	22-07-2020	1h16	Adélie Ranville
FR-WP3-COOP-FIELD-3	Enercoop	Field Actor	Employee (Public relations)	23-07-2020	1h02	Adélie Ranville
FR-WP3-COOP-FIELD-4	Energy Developer	Other Field Actor	Entrepreneur	23-07-2020	1h49	Adélie Ranville
FR-WP3-COOP-SIE-1	Énergies citoyennes en Pays de Vilaine	SIE-initiative	Employee (Network facilitator) & Board member	17-07-2020	1h04	Adélie Ranville
FR-WP3-COOP-SIE-2	Local cooperative	SIE-initiative	Board member	20-07-2020	1h12	Adélie Ranville
FR-WP3-COOP-SIE-3	Enercoop	SIE-initiative	Employee (Energy production)	17-07-2020	50mn	Adélie Ranville
FR-WP3-COOP-SIE-4	Local Enercoop	SIE-initiative	Board member	21-07-2020	1h	Adélie Ranville
FR-WP3-COOP-SIE-5	Local cooperative	SIE-initiative	Board member	28-07-2020	1h08	Adélie Ranville
FR-SIEI-pre1	Local cooperative	SIE-initiative	President	28/03/2019	73min	Anne-Lorène Vernay et Julien Doutre

FR-SIEI-pre2	Centrales Villageoises	Field Actor	President	11/02/2019	134 min	Carine Sébi and Julien Doutre
FR-SIEI-pre3	Local cooperative	SIE-initiative	Founder	27/03/2019	65 min	Carine Sébi and Julien Doutre
FR-SIEI-pre4	Network organisation	Field Actor	Employee (network animator)	21/02/2019	90 min	Carine Sébi and Julien Doutre
FR-SIEI-pre5	Supporting organisation	Field Actor	Founder	07/05/2019	55 min	Anne-Lorène Vernay
FR-SIEI-pre6	Local cooperative	SIE-initiative	Founder	05/12/2019	120 min	Carine Sébi and Julien Doutre

List of meetings and events attended

Event name	Event Organizer	Type of event	Date	Participants	Topic
Communautés énergétiques : quels enjeux pour les projets citoyens ?	Energie Partagée	Webinar	10/7/2019	Member of Energy Partagée Network	Transposition of the EU directive on community energy
Conseil d'administration de l'Association des centrales Villageoises	Centrales Villageoises	Board Meeting	3/3/2020	Board members of the federation	Organisation of the general meeting, partnership with Energie Partagée, Training for members, Newsletter of the network
10 ans d'Énergie Partagée : Partageons un Web Pique-Nique !	Energie Partagée	Webinar	18/05/2020	280 participants from the network and beyond, 8 actors of the movement presenting "	Retrospective of the movement for the 10 years anniversary of Energy Partagée

10 Annex 2

Detailed SIE-field timeline

We selected the events based on their relevance based on the literature and REC actors' point of view.

Date	Type of event	Description of event	Source
Phase 1	<i>Emergence of the field through the creation of intermediaries (2003-2015)</i>		
2003	SIE-field event	Publication of the first Negawatt scenario	(Aykut & Evrard, 2017)
2003	SIE-initiative event	Creation of Eoliennes en pays de vilaine	(EPV 2020)
2005	SIE-initiative event	<i>Creation of Solira (investment fund in Rhône Alpes)</i>	(Energie Partagée 2020)
2005	Policy 'event'	<i>Liberalization of the electricity market (pro consumers only)</i>	(Becuwe et al. 2010)
2005	SIE-initiative event	<i>Creation of Enercoop</i>	(Becuwe et al. 2010)
2007	Policy 'event'	<i>Liberalization of the electricity market</i>	(Becuwe et al. 2010)
2010	SIE-field event	<i>Creation of Energie Partagée from Solira</i>	(Energie Partagée 2020)
2010	Policy 'event'	<i>EU Call Enerscape</i>	(Thou et al. 2018)
2010	SIE-initiative event	<i>Emergence of the Centrale Villageoise Project</i>	(Thou et al. 2018)

2011	External shock and trend	<i>Fukushima accident</i>	
2012	Policy 'event'	<i>Presidential elections shift government to the left</i>	(Aykut & Evrard, 2017)
2014	SIE-field event	<i>1st REScoop.eu General Assemblée</i>	
Phase 2	<i>A short boom in citizen renewable energy project (2015-2017)</i>		
2015	Policy 'event'	<i>Energy Transition Law for Green Growth (LTECV)</i>	(Aykut & Evrard, 2017)
2016	Policy 'event'	<i>End of EDF monopole on Fed-in Tariff</i>	
2016	Policy 'event'	<i>EU Clean Energy package recognize energy communities</i>	FR-WP3-COOP-FIELD-3
2017	External shock and trend	<i>Tarifs for PV project <36kWc are no longer viable</i>	FR-WP3-COOP-FIELD-1
Phase 3	<i>Public recognition and scaling dilemmas (2017-...)</i>		
2018	SIE-field event	<i>Creation of the Association des Centrales Villageoises</i>	(Thou et al. 2018)
2019	Policy 'event'	<i>FR Energy and Climate law defining community energy</i>	FR-WP3-COOP-FIELD-3
2020	SIE-field event	<i>Partnership between Energie Partagée and Centrales Villageoises</i>	(Energie Partagée and Association des Centrales Villageoises 2019)
2019	SIE-field event	<i>1st National "assises" of citizen energy production (energie partagée + ADEME)</i>	FR-WP3-COOP-FIELD-5
2020	SIE-field event	<i>Energy Partagée Cartography and consolidate Citizen energy project datas</i>	FR-WP3-COOP-FIELD-5

